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TABLE OF CONTENTS

Surgical Treatment of Bronchial Carcinoma R. C. BROCK, F.R.C.S. 257

Explosive Epidemic of Sonne Dysentery C. A. GREEN, M.D., and M. C. MACLEOD, M.D. 259

Infective Hepatitis Treated with Glucose, Insulin, and Ascorbic Acid D. R. MACDONALD, M.B. 261

Anaemia in Infective Hepatitis J. N. HILL, M.B., and W. HAUSMANN, M.D. 262

Aetiology of the Fibrositic Nodule W. S. C. COPEMAN, M.D. 263

Vitamins and Physiological Function G. N. JENKINS, Ph.D., and J. YUDKIN, M.D. 265

Cry of the Child in Utero IAN M. JACKSON, F.R.C.S 266

MEDICAL MEMORANDA

Paralysis of Serratus Anterior after Glandular Fever. H. C. SAKSENA, M.B. 267

GENERAL ARTICLES AND NEWS

Surgical Mission to Moscow. R. WATSON-JONES, F.R.C.S. 276

Child Care in a National Health Service. G. F. BUCHAN, M.D. 273

Surgery in the Eighth Army 274

Supplies and Distribution of Penicillin: Statement by M.R.C. 274

Device for Protecting Exposed Cornea. F. RIDLEY, F.R.C.S. 268

BICENTENARY OF BIRTH OF LAVOISIER 275

SPEECH THERAPY 275

DISTRESS IN THE PROFESSIONS 277

THE SERVICES 285

UNIVERSITIES AND COLLEGES 286

MEDICAL NEWS 286

REVIEWS

Local Government 267

Laryngeal Surgery 267

After-care and Rehabilitation 268

Notes on Books 268

OBITUARY

D. A. Coles, M.R.C.S. 283

Geoffrey Holmes, M.B. 283

John Murray, F.R.C.S. 284

Prof. C. M. Campbell, M.D. 284

E. C. Smith, M.D. 284

Sir Beckwith Whitehouse, F.R.C.S. 284

Epidemiology Section 285

LEADING ARTICLES

The Penicillin Position 269

Tuberculosis in Childhood 270

ANNOTATIONS

Ergot Alkaloids and Involution of Uterus 270

Clinical Biotin Deficiency 271

Vitamin C and Cooking 271

Cleaning Milk Bottles 272

LETTERS AND ANSWERS

Treatment of P.M.A.—"Postural" Headache — Laryngoscopy — Safe Period—Cadaver Body Temperature—Fragilitas Ossium—Blood for Wassermann — Gynaecomastia — Midge Bites—Professional Secrecy — Pyretotherapy for Arthritis — Prognosis in Epilepsy—A Point of Nomenclature—Income Tax—Loss of Hair — Tapeworm Segments Wanted—Appeal for Back Numbers 286-8

SUPPLEMENT

CORRESPONDENCE 27

SOME LONDON DOCTORS' VIEWS 28

FUTURE HEALTH SERVICES SEEN FROM THE R.A.M.C. 28

ASSOCIATION INTELLIGENCE 28

POSTGRADUATE NEWS 28

CORRESPONDENCE

Foundations of a Comprehensive Health Service. G. F. BUCHAN, M.D. 278

A Prisoner of War on State Medical Service. STANLEY GILDER, M.R.C.S. 278

General Principles for Future Medical Services. E. C. ATKINSON, M.B. 278

National Health Policy. C. K. VARTAN, F.R.C.S., and E. MONTUSCHI, M.D. 279

Fact and Fancy in Poliomyelitis. NORMAN CAPENER, F.R.C.S. 279

Ariboflavinosis Syndrome. D. FITZGERALD MOORE, M.R.C.S. 279

Specific Gravity of Cerebrospinal Fluid. N. C. LAKE, F.R.C.S. 280

Globin Insulin. R. D. LAWRENCE, M.D. 280

Mastoiditis and D. and V. in Infants. R. L. WORRALL, M.B.; BRUCE WILLIAMSON, M.D.; EMILY L. SIMON, M.D. 280

The Government's Milk Policy. J. F. WARIN, M.D.; P. J. MCKENNA, M.B. 281

The Medical Superintendent. W. A. RAMSAY, M.D. 281

Sterility and the State. ALBERT SHARMAN, M.D. 282

Kienböck's Disease. J. D. H. BIRD, F.R.C.S. 282

Teaching of Dermatology. G. N. MEACHEN, M.D. 283

Maintenance Dose of Digitalis. H. GOLD, M.D. 283

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY AUGUST 28 1943

SURGICAL TREATMENT OF BRONCHIAL CARCINOMA

BY

R. C. BROCK, M.S., F.R.C.S.

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Less than a generation ago primary cancer of the lung was thought to be a rare curiosity; to-day it is recognized as a common condition, and ranks next to cancer of the colon in frequency in men. I see an average of some 75 new cases each year. In spite of this high incidence the diagnosis is often overlooked for many months—frequently until death is imminent. The problem of diagnosis is a large one, and cannot be dealt with fully here, but certain aspects that impress one as important demand comment.

First and foremost we must, as a profession, become more "carcinoma-minded" in regard to the lungs. We are carcinoma-minded in regard to the breast, and so is the general public. We are less so in the case of the abdominal viscera, but far more so than in the case of the lungs. Malignant disease of an abdominal organ should be thought of whenever there is any disturbance of function or even awareness of the presence of any particular viscus. This, and no more, should give rise to suspicion, and calls for investigations that will lead to early identification of malignant disease or to its reasonable exclusion. The same is true of the lungs. The first signs or symptoms of bronchial carcinoma consist of *any change from normality*, and the commonest of these is cough. This is usually dry and unproductive, and is often dismissed as "smoker's cough," "bronchial catarrh," or some such vague condition. When an alarming symptom such as haemoptysis compels attention the story may be obtained of this premonitory cough extending back over many months but treated symptomatically or not at all.

By far the most important group of symptoms arises from the infection that sooner or later follows upon bronchial obstruction; this may affect the whole lung, a lobe, or only a segment of a lobe. It often begins as an apparently straightforward attack of pneumonia or "influenza," but significantly resolves incompletely or not at all. "Delayed resolution," "unresolved pneumonia," recurrent or smouldering sepsis in part of a lung, particularly in a patient of middle age, should always give rise to a strong suspicion of malignant disease. The attack of pneumonia that ushers in the illness of a bronchial carcinoma may be followed by an empyema which is drained in the ordinary way. Since the empyema is due to infection in the obstructed bronchial tree, which is now able to drain only peripherally, healing does not occur, and a chronic empyema follows; further operations may be performed in an attempt to secure healing. I find that every year I see some half-dozen cases of empyema of this type in which the real diagnosis has been quite unsuspected.

General deterioration of health, loss of weight, and loss of strength should not be regarded as signs of carcinoma of the lung if the patient is to be successfully treated. They are usually the signs of approaching death, and so far as operability is concerned their presence almost always means that the case is unsuitable. If at the first glance the patient is seen to be ill, wasted, toxic, or distressed, then it is my experience that little can be done. Surprise is often expressed that a diagnosis of carcinoma of the lung has been made when the patient looks so well; only too often the fell possibility has been overlooked because of this apparent well-being. If we are to diagnose this grave and fatal condition in a reasonably curable phase it *must* be remembered that the slightest departure from normality in the lungs and bronchi is suspicious and needs pursuing. It is true that the operability of carcinoma of the lung is low—rather less than 10%—and a case missed until the condition is too far advanced to treat may be of little moment in a series of figures. That one missed case may, however, cover a considerable personal or family tragedy which, with good fortune and medical alertness, might have been avoided.

Once the presence of a growth of the lung is suspected careful clinical examination must follow, but reliance upon this alone is apt to lead astray. Physical signs may be absent or equivocal, and our first dependence must be on good radiographs of the chest, lateral as well as postero-anterior. Any suspicious shadow revealed will demand further investigation by bronchoscopy, especially when the diagnosis of "unresolved pneumonia" has been suggested. Bronchoscopy should precede a bronchogram, which is then often found to be unnecessary if the growth can actually be seen and a piece removed for biopsy.

Treatment

In the present state of our knowledge the only way to achieve cure of a bronchial carcinoma is by operation. Deep *x* rays are of value, and may produce striking temporary recession of the growth and relief of distressing symptoms. On the whole the results are disappointing and life is but rarely prolonged, which is not surprising in view of the advanced state of the disease and the associated sepsis that is so often present when the patient is sent for treatment; in many cases death is actually hastened. Local treatment by radium or radon is also disappointing and certainly never curative. It may cause striking improvement by recanalizing the obstructed bronchus and allowing infected material to drain (Brock and Cann, 1938), but just as often it is followed by a rapidly progressive increase in the infection, leading to fatal pneumonia or massive haemoptysis.

Surgery alone holds out the hope of permanent cure to the sufferer from bronchial carcinoma, and the correct operation is removal of the whole lung by dissection of the main vessels and bronchus and of the adjacent mediastinal lymphatic glands. This procedure is in accordance with the sound surgical principles followed in the treatment of malignant disease of other organs, such as the breast and colon. Treatment by lobectomy is

* Based on a paper read before the Medical Society of London on March 15, 1943.

but rarely possible technically owing to the nearness of most growths to the hilum, and is undesirable on general grounds as the removal is necessarily incomplete. In practice the recurrence rate after lobectomy is unduly high—much higher than after pneumonectomy. It is an operation that may be indicated at times in an elderly patient with a peripherally situated growth for whom pneumonectomy would seem to be too great a risk.

Lest it be thought that dissection pneumonectomy is a drastic operation to propose it should be remembered that bronchial carcinoma itself is no gentle process, but is a severe and drastic disease. The operation is actually very well borne by the patient and is fully justified by the results. It was first performed successfully by Graham in 1933, the patient being a physician who was still alive and engaged in active practice up to one year ago and, so far as I know, still is.

Although many reports of series of cases, both large and small, have been published from America, no large series has to the best of my knowledge yet been published from this country. A few cases have been recorded in English journals (e.g., Allison and Stanbury, 1938), but it is high time that a more comprehensive report of experiences with the operation appeared for critical assessment. One of the objects of this paper is to present such a series.

One finds that those seeking information about pneumonectomy for bronchial carcinoma usually want to know four things: (1) How often can the operation be performed? (2) What is the mortality? (3) How long may the patient be expected to survive? (4) How much can he do afterwards? I propose to present my own series of cases and experiences so as to answer these four questions.

1. Operability

The operability appears to vary with different surgeons, but this is probably due largely to the type of patient being seen. For instance, the operability rate is rather higher in patients of better class than in the middle-aged or elderly poor. Moreover, a surgeon who receives his cases principally from a physician will have a higher operability rate than one who sees a larger number of cases first-hand, for the preliminary examination by the physician will lead to many being rejected at once. The operability rate of the surgeon who sees all types of patients will be much lower, much gloomier, but will be more accurate for the disease as a whole.

In 1938 I published an analysis of 106 consecutive cases seen over a period of 15 months, and in only 13 of these was exploratory thoracotomy considered worth doing, the remainder being unsuitable on account of age, poor general condition, or the extent of the growth. Of these 13, four refused operation, and of the remaining 9 who consented five were inoperable; in only four could the growth be removed.

I have kept records of another series of consecutive cases seen during the last 2½ years (since Jan., 1941), and the figures are as follows:

Total number of cases seen	187	
Thoracotomy advised	37	
,, refused	4	
,, accepted	33	(18%)
Operable by pneumonectomy 14	15	(8%)
,, lobectomy 1		
Died from operation	2	
Inoperable at thoracotomy	18	
Total inoperable	172	(92%)

It will be seen that the incidence of operable cases is but little higher than in the earlier series, and is still only 8%. These figures may be compared with those published by Overholt (1940) of Boston, whose findings were as follows:

Total cases	104	
Thoracotomy advised	52	(50%)
Pneumonectomy 17	21	(20%)
Lobectomy 4		
Died	7	
Total inoperable	83	(80%)

This series represents Overholt's experience over a period of six years, and at first sight it would seem that he has shown the condition to be much more favourable than appears from my own series. I think the explanation lies in the fact that many of his cases were selected before being referred for consideration of operation. This is supported by the fact that over a period of nine years I have performed exploratory thoracotomy on 65 cases, of which 29, or rather less than half, were found to be operable. This agrees closely with Overholt's findings at operation, and suggests that the apparent discrepancy lies in the grand total of all cases seen by him being relatively rather small. Whereas he has seen 104 cases over a period of six years, I estimate that I have seen a total of some 450 cases over a period of nine years.

The conclusion, therefore, is that, taking cases of bronchial carcinoma as a whole, rather less than 20% are considered to be favourable enough to justify exploratory thoracotomy, and in rather less than half of these will the growth be found operable. The actual operability rate is at present approximately 8%. It is hoped that this figure will be improved upon with earlier diagnosis, but the condition even then would still remain one of the utmost gravity.

2. Mortality

Since the number of cases found operable in this series is relatively small it is clear that no hard-and-fast conclusions can be drawn; it is only possible to present the figures as they now stand and to draw what conclusions one can. The small number of cases is also rather disproportionately and adversely affected by the higher mortality that necessarily occurred in the early days, when the operation was less well understood. Thus I was unfortunate in losing, for one reason or another, my first four pneumonectomies—a bad start which has needed much making up. The present position is:

Total cases found operable	29 (3 lobectomy)
Died from operation	8
Died from recurrence	7
Alive and well	14

The operative mortality of 29% given by these figures is undoubtedly exaggerated. As already mentioned, four of the deaths occurred in the first four patients submitted to pneumonectomy, at least two of which would have been avoided to-day. Again, of the 8 deaths four were in patients over 60. I have had only one patient over 60 survive; he was a man of 63 who underwent lobectomy and not pneumonectomy, and is still alive and working 2¾ years after. Out of 70 successful cases collected from the literature by Overholt (1940) only 6 were in patients over 60 years of age. It would thus appear that the operation carries a much higher mortality in these older patients.

The four deaths from operation since the first four consecutive deaths occurred in patients aged 64, 65, 64, and 46; the last of these had a large growth and was a poor risk; he died three weeks after operation from an abscess in the remaining lung. With the exception of this man all the patients under 60 since the first four fatal cases have survived operation. The mortality should also be considered in connexion with a series of 14 cases in which I have performed pneumonectomy 10 times and lobectomy 4 times for the condition of so-called bronchial adenoma, with only two deaths. Although the tumour in these cases was not frankly malignant these patients are usually just as bad operative risks as those with frank carcinoma.

One is therefore justified in postulating that pneumonectomy performed properly for carcinoma in a patient under the age of 60 should not carry a high operative risk—certainly not much more than 10%.

3. Recurrence Rate

It is next necessary to consider the prospect of freedom from recurrence that awaits those patients who survive the operation for removal of their growth. Here again the smallness of the numbers introduces an element of error, which is also aggravated by the relatively short time that has elapsed since operation in many of the survivors. In any case, the problem is a complex one and dependent in great part on the type of growth with which one is dealing. For instance, a young patient with an anaplastic carcinoma has a poor expectation of life, however early the growth is removed. A patient in the fifties with a small well-differentiated squamous-celled growth can reasonably expect long survival or even cure. Graham's first successful case, it should be remembered, has certainly enjoyed at least nine years of freedom from recurrence, and this patient is probably still alive, more than ten

years after. There are as yet only a few records in the literature of cases followed up for as long as five years, but enough exist to show that for shorter periods the prognosis compares favourably with that of the surgery of cancer of most other organs. It should be remembered that, although occasional untreated patients may live for as long as one or two years, the average expectation of life is generally accepted as being about six months.

The results in my own 21 survivors of operation are as follows:

Patients still alive and well after operation (14):	
After 4½ years	1
,, 3 ,,	2
,, 2½ ,,	1
,, 2 ,,	3
,, 1½ ,,	2
,, 1 year or less	5
Deaths from recurrence (7):	
Lived 2½ years	1
,, 1½ ,,	1
,, 1 year	1
,, 9 months	2
,, 2 ,,	2

The two patients who died from recurrence two months after operation had soft, rapidly growing, poorly differentiated tumours. There is little doubt that if this type can definitely be recognized without operation it should be submitted to deep *x*-ray therapy in preference to pneumonectomy.

4. How Much can the Patient do After Successful Pneumonectomy?

Providing the patient has survived operation and is free from recurrence, what disability is he to expect from his pneumonectomy? The answer is that disability is negligible or absent in almost all cases. A small proportion may be left with a discharging sinus, but with modern methods this should not happen often. Of my own 21 patients who survived operation sound healing occurred in all but one, which is a recent case still undergoing treatment. Only one patient needed a thoracoplasty; the rest healed by primary intention or after a short period of drainage, and with *no deformity*. Every one of the survivors has been able to return to his former occupation or to one of a similar type. These occupations include hard manual work for long hours. For instance, one patient is able to work a 14-hour shift and does heavy digging in his garden and on his allotment; another is a motor mechanic; a third a butcher working a full day and lifting heavy loads; yet another is a London taxi-driver. It is impossible, when watching these patients working or walking about, to detect any disability or abnormality. Although a few may complain of some dyspnoea on hurrying or climbing stairs for the first few months after operation, this soon passes off, and all ordinary things can be done with no sign of distress at all. One patient recently drove himself 550 miles in two days without fatigue.

Even in those patients who succumb to recurrence the operation is usually well worth while, since by the removal of the obstructed and infected lobe or lung they lose their toxaemia, fever, and sputum, and are able to carry on normally almost until the end.

Conclusion

Although bronchial carcinoma remains a terrible and fatal disease in by far the greater proportion of cases, the outlook has been improved in that, whereas a few years ago the diagnosis was synonymous with a death warrant, to-day rather less than one patient in ten has a good chance of survival if submitted to early radical operation. Of those who survive operation a number will be cured, a number will have their life prolonged, and all can expect to continue to earn their living in comfort and without disability. Surgery can be said to have justified itself in the treatment of bronchial carcinoma.

It is therefore imperative that as a profession we should be on the alert to diagnose these cases early, so that the small proportion of favourable cases should not be robbed of the chance of cure or relief that is open to them.

REFERENCES

Allison, P. C., and Stanbury, W. S. (1938). *Lancet*, **2**, 1165.
Brock, R. C. (1938). Ibid., **2**, 1041, 1103.
—— and Cann, R. J. (1938). *Guy's Hosp. Rep.*, **88**, 371.
Overholt, R. H. (1940). *Surg. Gynec. Obstet.*, **70**, 479.

EXPLOSIVE EPIDEMIC OF SONNE DYSENTERY

BY

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AND

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Recent investigations of outbreaks due to *B. dysenteriae* Sonne have stressed the importance of carriers and ambulant cases in the spread of disease (E.P.H.L.S., May, 1942; Hobbs and Allison, 1942). In rare instances milk has been shown to be a direct vehicle of infection, as reported by Scott (1938) and Faulds and Gavin (1942), while more frequently milk or milk dishes have been suspected, but without final proof being obtained (Graham, 1942; E.P.H.L.S., May, 1942). A search of the literature has not revealed any instance of an epidemic in which the possibility of water-borne infection was subsequently supported by laboratory evidence. For this reason the circumstances attending the onset of an outbreak in a Somerset town are recorded.

While diarrhoea of a mild and indeterminate nature has been observed in this district for some years it was not until Sept., 1941, that *B. dysenteriae* Flexner was isolated from a number of the affected individuals. This small outbreak quickly subsided and few secondary cases developed. Since that time the community has been relatively free from dysentery until the serious outbreak in July, 1942.

Onset of the Epidemic

The earliest noted case was that of a young boy whose initial symptoms of nausea and vomiting were diagnosed as acute appendicitis. Operation was followed by diarrhoea. This led to the unmasking of ten cases in children who were all day scholars or boarders at a small private school. Within a week many cases were seen, and it was evident that residents in all parts of the town were simultaneously affected. *B. dysenteriae* Sonne was isolated on desoxycholate-citrate agar (Hynes, 1942) from the stools of the first six cases examined. The epidemic involved both sexes, at all ages from 2 to 80 years.

The total number was uncertain, as the only cases for which medical aid was invoked were the children and older people. It was estimated that from July 14 to July 20, the first week of the epidemic, there were no fewer than 200 cases. Within the first month the total of cases was close on 400 out of a population of 10,000.

Clinical Notes

In the individual case the onset was heralded by sudden prostration, with headache, slight rigor, rise of temperature to 101° F., sickness and vomiting, colic, and diarrhoea. Stools were usually profuse and watery, offensive, with blood and mucus intermingled. Fever tended to subside within three to five days, but in some cases the acute phase lasted a week. Relapses were common, especially in children who clamoured successfully for more solid food soon after the acute phase was over. Post-dysenteric colitis was noted in several subjects. The administration of salines with a light fluid diet, continued for several days after the cessation of diarrhoea, was the general line of treatment. Astringent sedatives for the arrest of persistent diarrhoea and colic were required in many cases.

Distribution of Cases

Cases were distributed at random all over the town. Owing to the fact that a relatively small proportion sought medical advice it was impossible to state categorically whether any area was affected more than others. The larger proportion of notified cases resided in the upper part of the town, due probably to the fact that it was occupied by the wealthier section of the community, who were more likely to seek medical advice.

In addition to the main town, a small village derived its water supply from the same source, although the water was stored after chloramination in a reservoir used solely by the village. The volume of the water in the reservoir was such

that the period of contact with the chloramine used for purification was over four days. Not one case of dysentery occurred in this village during the time of the epidemic in the town.

Milk and Water Supply

The first 30 cases notified, including those in the original school epidemic, were supplied with milk from one particular dairy, but repeated examinations of the milk for *B. dysenteriae* Sonne were negative. Furthermore, the milk in question was obtained from a farm which sent the remainder of its supply to another retailer, who delivered in bulk and had few dysentery cases among his large clientele.

The water supply for the entire town was derived from two deep wells. Water was pumped in a 12-in. main from the distant well, two miles from the town, to the near well, which was situated one mile from the town. The entire output of the two wells was then pumped in a 14-in. main to two tanks, high and low level, from which the distributing mains passed to the town. From source to consumers the water was contained in a closed system save for the ventilating system of covered cowls in the collecting-tanks.

Treatment of the Water

First chlorination and later chloramination had been practised for several years on account of the increasing risk of pollution following upon the erection of dwelling-houses with cess-pits in the area draining to the site of the wells. Although conditions were not serious at the time when chlorination was initiated, the water company concerned had wisely considered it advisable to institute preventive measures, the control of building being outside their jurisdiction. In each well chloramination was effected by means of a pulsometer, the principle being that the chloramines were preformed in a small volume of water which was mixed with the main volume as it entered the rising main of the well. The ratio of chlorine to ammonia was two parts to one part, while the minimum duration of contact before delivery to the consumer was variable, depending on the locality of the consumer's residence. It was unlikely that the contact period was ever less than three hours, but equally certain that large volumes of water were used just after that period. This was due to the increased demand for water at peak periods of the day, resulting from a great increase in the wartime population. This increase was particularly felt in the lower portion of the town receiving its supply from the low-level tank. The above treatment was controlled by periodic estimations of the residual chlorine in a sample from the main pipe a few yards beyond the rising main of the wells. The amounts of chlorine and ammonia were adjusted to give 0.15 p.p.m. residual chlorine as tested by the orthotoluidine method. Repeated tests in houses supplied by high-level and low-level tanks showed little fall in this value, 0.12 p.p.m. being the lowest figure obtained.

Bacteriological Examination of Water

On July 24 a routine examination of the water from a tap in the laboratory which was supplied by the high-level tank gave the following result:

Growth at 22° C.	190	organisms per c.cm.	Residual chlorine 0·15 p.p.m.
,, 37° C.	6	,,	,,
Lactose fermenters	0	,,	,,
B. coli	0	,,	,,
Streptococci	0	,,	,,

At the same time six 100-c.cm. samples of water from the same source were each added, within 5 minutes of collection, to 100 c.cm. double-strength beef-digest broth. After 24 hours' incubation at 37° C. five bottles remained sterile and one bottle showed a turbid growth. Subcultures on MacConkey plates gave lactose-fermenting coliform colonies together with two pale colonies, both of which were examined fully. Both colonies gave identical results, the organism being a non-motile Gram-negative bacillus with the following biochemical reactions (− indicates no acid or gas produced; +, acid but no gas produced).

Glucose	Lactose	Dulcite	Saccharose	Mannite	Maltose
+	+ (late)	−	−	+	+

Xylose	Arabinose	Inosite	Indole
−	−	−	−

Both strains were agglutinated to end-titre by Oxford Standards Laboratory sera, stated to be specific for *B. dysenteriae* Sonne, and rabbit antisera prepared against both strains agglutinated *B. dysenteriae* Sonne to titre.

On July 29 six 100-c.cm. samples of water were again tested as above, and all remained sterile.

An opportunity of testing the untreated water in the more remote well on Aug. 24 resulted as follows:

Growth at 22° C.	0	organisms per c.cm.	
,, 37° C.	5	,,	,,
Lactose fermenters	25	,,	,,
B. coli	2	,,	,,
Streptococci	0	,,	,,

The *B. coli* belonged to the atypical *coli-aerogenes* group.

On Aug. 27 the untreated water in the near well was also examined, with results as follows:

Growth at 22° C.	0	organisms per c.cm.	
,, 37° C.	15	,,	,,
Lactose fermenters	25	,,	,,
B. coli	2	,,	,,
Streptococci	0	,,	,,

The *B. coli* belonged to the atypical *coli-aerogenes* group. No dysentery organisms were isolated from either of the untreated waters, using a variety of media including desoxycholate agar.

The senior technician who took the sample of water from which the two colonies of *B. dysenteriae* Sonne were isolated was in good health, was not himself a carrier, and gave no history of past infection. Furthermore, he was employed daily in handling media used in the preparation of T.A.B.T. vaccine, and on no occasion has *B. dysenteriae* Sonne been found in media handled by him. The specimen of water was taken and the identification of the organism carried out in a laboratory to which *B. dysenteriae* Sonne had never been introduced, and all stages of identification were conducted by one of us (C. A. G.) personally.

Waterworks Employees

Eight employees of the water company had direct access to the water before distribution. All were examined, with negative results as regards present or recent intestinal illness. Their sera showed a complete absence of agglutinins for *B. dysenteriae* Sonne, although H agglutinins for *B. typhosus* to a titre of 1:250 persisted in four men inoculated at least 25 years previously.

Agglutinins for B. dysenteriae Sonne

Sera from seven cases were examined for agglutinins against *B. dysenteriae* Sonne. The accompanying table indicates that agglutinins afforded a useful confirmation of the diagnosis in the few cases examined, only one failing to respond. Relatively high titres were recorded for the two children in the group. In one case the criterion of a rising titre was obtained. As controls, sera from eight healthy volunteers from the same locality and without history of recent diarrhoea were examined. No agglutination was detected in any serum even in a dilution of 1:10.

*Table showing the Agglutinin Titre of Sera from 7 Typical Cases. B. dysenteriae Sonne (Oxford Standards Laboratory Suspension)**

Case	Age in Years	Duration of Acute Illness in Days	Days from Start of Illness to Time of taking Blood Specimen	Serum Dilution 1:10	1:25	1:50	1:125	1:250
1	35	3	13	+++	++	±	−	−
2	30	2	16	−	−	−	−	−
3	40	5	14	+++	+++	+++	++	−
4	31	6	14	+++	++	+	−	−
5	10	4	10	+++	+++	+++	+++	+++
6	6	4	10	+++	+++	+++	+++	+++
7	34	4	1	−	−	−	−	−
			10	+++	++	+	−	−
			16	+++	+++	+++	++	−

* Sera from eight healthy individuals in same locality were all negative at a dilution of 1:10.

Action Taken to Prevent Further Infection

The isolation of *B. dysenteriae* Sonne from chloraminated water led to immediate experimental work, still incomplete, which suggested the strong possibility that the dosage of chloramine in use was too small for the shortest possible contact period. Accordingly the amount was raised so as to give a

residual chlorine reading of 0.4 p.p.m. At the same time the ratio of chlorine to ammonia was increased from two to four parts of chlorine to one of ammonia with the object of accelerating the process of sterilization. After this step had been taken a few cases of dysentery continued to occur, but seldom was it impossible to find a history of contact with a previous case.

Discussion

The character of the epidemic suggested some general source of infection such as a common food or water. The fortunate circumstances under which *B. dysenteriae* Sonne was isolated from a sample of water precluded the possibility of a sampling error having been made. The disturbing feature was the fact that the sample of water satisfied the usual standards for purity, and that 0.15 p.p.m. residual chlorine was still present. This appeared to be a direct contradiction until it was found experimentally that *B. dysenteriae* Sonne could survive after treatment with this strength of chloramine for periods longer than those applicable to many of the consumers. The position was rendered more dangerous by virtue of the fact that the chlorine–ammonia ratio of 2:1 was such as to delay considerably the sterilization process, as shown by Elliott (1933). Notwithstanding the satisfactory results of the single tests performed on the raw well-waters and that subsequent tests of the treated water were invariably negative, the fact remained that cess-pits were in existence in the drainage area and the water therefore remained suspect.

The apparent connexion observed at the onset of the epidemic between one particular milk supply and a group of cases was interesting in the light of the finding of *B. dysenteriae* Sonne in the water supply. The dairyman concerned was in the habit of rinsing his bottles with cold tap-water after they had been sterilized by steam, and probably introduced the infection to his supply in that manner.

Flies were considered as possible vectors which may have produced an explosive epidemic, particularly as the town sewage is discharged untreated into the sea at no great distance from the town. At the time of the present epidemic, however, there were remarkably few flies in evidence—a fact commented upon by many observers. When the epidemic had practically subsided the usual summer increase in the fly population developed without stimulating further infection. This fact appeared to minimize the importance of flies in this particular epidemic, for with the persistence of the carrier state (E.P.H.L.S., Nov., 1942; Hobbs and Allison, 1942) ample opportunity must have occurred for the transference of infection from faeces to town during the period of heavy fly infestation.

Summary

An outbreak of Sonne dysentery involving approximately 400 cases is described.

Milk was excluded as a general source of infection, although probably indirectly responsible for one small group of cases.

B. dysenteriae Sonne was isolated from one sample of tap-water which passed the usual bacteriological tests satisfactorily and which contained 0.15 p.p.m. residual chlorine.

The evidence for incriminating the water supply as the source of infection is discussed.

We wish to acknowledge with thanks the willing co-operation of the director and staff of the water company, the milk retailers, and the blood donors during the investigation.

References

Elliott, S. (1933). *J. R.A.M.C.*, **61**, 161.
E.P.H.L.S. *Monthly Bulletin*, May, 1942.
Ibid., Nov. 1942.
Faulds, J. S., and Gavin, F. W. (1942). E.P.H.L.S. *Monthly Bulletin*, Sept.
Graham, J. R. (1942). *Lancet*, **2**, 553.
Hobbs, B. C., and Allison, V. D. (1942). E.P.H.L.S. *Monthly Bulletin*, July.
Hynes, M. (1942). *J. Path. Bact.*, **54**, 193.
Scott, W. M. (1938). *Lancet*, **2**, 796.

According to a law introduced in April, 1942, everyone in Norway who has reached the age of 15 years must have his lungs examined by screen photography when the authorities demand it. Persons exempt from this obligation are those who have been *x*-rayed at school or who are notified cases of pulmonary tuberculosis and have been *x*-rayed within twelve months of the time they reach the age of 15. When the examination has been completed, information to this effect is stamped on the person's identity card (*Tidskrift for Norges Laegeforbund*, July 1, 1942, No. 13).

INFECTIVE HEPATITIS TREATED WITH GLUCOSE, INSULIN, AND ASCORBIC ACID

BY

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Infective hepatitis (syn., infective jaundice, epidemic catarrhal jaundice) is an endemic disease in Omdurman. During 1942 50 cases were admitted to Omdurman Civil Hospital, a native hospital of 215 beds. Of these cases 42 fell in the age group 10 to 33 years. The duration of the disease was 2 to 7 weeks (average 23 days). From time to time minor epidemics of the disease have occurred, and these have often included one or two severe cases resembling acute liver atrophy which have ended in death from profuse bowel haemorrhage. Various forms of treatment have been tried, including massive doses of glucose, intravenous drip infusions of glucose and alkali, intravenous sodium thiosulphate, and repeated medical drainage of the gall-bladder. None of these measures has appeared to have had the slightest effect upon the course of the disease. Recently El Kaimakam H. J. Bell (then venereologist to the Sudan Defence Force) read a paper to the Sudan Branch of the British Medical Association on "Arsenical Toxaemia." In his paper Major Bell described some very striking results which he had obtained by the use of glucose, insulin, and ascorbic acid in the treatment of late toxic conditions resulting from the treatment of syphilis by neoarsphenamine. These cases included arsenical jaundice. Major Bell's paper suggested a possible new line of treatment for infective hepatitis, particularly as there is a good deal of evidence to suggest that arsenical jaundice may be due to the synergic action of neoarsphenamine and the causal agent of infective hepatitis, probably a virus. Accordingly five consecutive cases of infective hepatitis admitted to Omdurman Civil Hospital were treated on these lines, and a summary of the case records is given below.

Case I

A Sudanese male aged 26 was admitted on Feb. 16, 1943, with a complaint of jaundice for 4 days, accompanied by nausea, flatulent dyspepsia, and constipation. There was no history of syphilis or of treatment by arsenicals.

Condition on Admission.—Afebrile; moderately severe jaundice; tongue coated; liver dullness normal; spleen not palpable. Urine: bilirubin and bile salts present; no albumin. Stools clay-coloured. Blood: no malarial parasites. White cell count, 8,200 per c.mm.—polymorphs 53%, lymphocytes 44%, large mononuclears 1%, eosinophils 2%. Capillary resistance test normal.

Progress and Treatment.—Feb. 17: Condition unchanged. Treatment started: glucose by mouth, 5 oz. daily; insulin, 10 units twice daily; tab. ascorbic acid (25 mg.), three tablets thrice daily. Temperature rose to 99.2° in the evening. Feb. 18: Afebrile; trace of jaundice. Feb. 20: Afebrile; no jaundice; no symptoms.

Case II

Sudanese male aged 38, admitted Feb. 7, 1943. Severe lumbar pain for 5 days and jaundice for 3 days with flatulent dyspepsia, nausea, and constipation. He had no history of syphilis or of treatment by arsenicals.

Condition on Admission.—Afebrile; very deeply jaundiced; tongue coated; liver dullness slightly diminished; spleen not palpable. Bilirubin and bile salts present in urine, with a trace of albumin. Stools clay-coloured. No malarial parasites in blood. White cell count, 9,800 per c.mm.—polymorphs 51%, lymphocytes 45%, eosinophils 4%. Large mononuclears were absent. Capillary resistance test normal.

Progress and Treatment.—Afebrile throughout. Condition remained unchanged until treatment started. Feb. 16: Treatment with glucose by mouth, 5 oz. daily; insulin, 10 units twice daily; tab. ascorbic acid (25 mg.), three tablets thrice daily. Feb. 18: Jaundice greatly decreased. Feb. 20: A faint icteric tinge only could be detected on the conjunctivae. Feb. 22: Jaundice gone; no symptoms.

Case III

Sudanese female aged 22, admitted Feb. 14, 1943, complaining of jaundice, dyspepsia and continuous nausea for 7 days, and constipation. There was no history of syphilis or of treatment by arsenicals.

Condition on Admission.—Afebrile; moderately severe jaundice; tongue coated; liver dullness normal; spleen not palpable. Bilirubin and bile salts present in urine, and a trace of albumin. Stools clay-coloured. No malarial parasites in blood. White cell count, 8,500 per c.mm.—polymorphs 55%, lymphocytes 40%, large mononuclears 3%, eosinophils 2%. Capillary resistance test normal.

Progress and Treatment.—Temperature rose to 99.2° on evening of Feb. 15 and to 99.8° on evening of the 16th; otherwise afebrile. Feb. 16: condition unchanged. Treatment started: glucose, 5 oz. by mouth daily; insulin, 10 units twice daily; tab. ascorbic acid (25 mg.), three tablets thrice daily. Feb. 17: Trace of jaundice. Feb. 19: Jaundice *nil*; no symptoms.

Case IV

Sudanese male aged 9 years, admitted Feb. 15, 1943, having had jaundice for 7 days, with constipation. There was no history of treatment by arsenicals.

Condition on Admission.—Afebrile; moderately severe jaundice; no signs of congenital syphilis; tongue coated; liver dullness normal; spleen not palpable. Bilirubin and bile salts present in urine; no albumin. Stools clay-coloured. No malarial parasites present in blood. White cell count, 5,700 per c.mm.—polymorphs 39%, lymphocytes 56%, large mononuclears 3%, eosinophils 2%. Capillary resistance test normal.

Progress and Treatment.—Afebrile throughout. Feb. 16: Condition unchanged. Treatment started: glucose by mouth, 2 oz. daily; insulin, 5 units twice daily; tab. ascorbic acid (25 mg.), one tablet thrice daily. Feb. 18: Faint icteric tinge only to be seen on the conjunctivae. Feb. 19: No jaundice; no symptoms.

Case V

Sudanese female aged 70, admitted Feb. 17, 1943, complaining of jaundice for 30 days accompanied by flatulence and nausea. There was no history of syphilis or of treatment by arsenicals.

Condition on Admission.—Afebrile; emaciated; intense jaundice; liver dullness normal; gall-bladder and spleen not palpable; nothing abnormal discovered clinically elsewhere. Bilirubin and bile salts present in urine; no albumin. Stools clay-coloured. No malarial parasites in blood. White cell count, 4,800 per c.mm.—polymorphs 61%, lymphocytes 34%, large mononuclears 4%, eosinophils 1%. Capillary resistance test normal.

Progress and Treatment.—Afebrile throughout. Feb. 18: Treatment started: glucose, 5 oz. by mouth daily; insulin, 10 units twice daily; tab. ascorbic acid (25 mg.), three tablets thrice daily. Feb. 21: Condition unchanged.

Note.—In view of the patient's age, the intense degree of jaundice without haemorrhages and without diminution of liver dullness, and the emaciation, this may well be a case of carcinoma of the head of the pancreas.

Summary

The treatment is described of five cases of infective hepatitis, taken at random, by glucose, insulin, and ascorbic acid. In Cases I, III, and IV there was complete remission of all symptoms and signs in 3 to 4 days. In Case II, a severe one, there was marked improvement in 4 days. In Case I the disease lasted only 9 days (the lowest time recorded in Omdurman Civil Hospital); in Case III it lasted 14 days; in Case IV it lasted 12 days. All these times are well below the average of 23 days. In Case V, in which, however, for the reasons stated above, there was cause to doubt the accuracy of the diagnosis, there was no change.

Although it is appreciated that it would be rash to base conclusions on the results of a series of only five cases, nevertheless, in view of the importance of this disease and in view of the striking results obtained in three of the cases, it has been considered desirable to place these notes on record without delay.

I wish to acknowledge my indebtedness to the Director, Sudan Medical Service, for permission to publish these case records; to Major H. J. Bell for his valuable paper on arsenical toxaemia; and to Dr. Mahmoud Hussein for his assistance in compiling the records.

LIVER DEFICIENCY ANAEMIA IN A CASE OF ACUTE INFECTIVE HEPATITIS

BY

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AND

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The following is an account of a case of liver deficiency anaemia which occurred acutely during the course of an infective jaundice. There was slight anisocytosis and practically no poikilocytosis, and the anaemia responded with a clear-cut reticulocytosis to injections of liver, the only haematinic employed. There was no associated achlorhydria or even hypochlorhydria, nor were there any nervous symptoms. The condition would appear to have been due solely to the effects of liver damage, as there had been no evidence of gastric disturbance since admission and the anaemia developed while the patient was in hospital.

Case History

The patient is a gamekeeper on a moorland estate in Yorkshire, and was known to one of us (J. N. H.) before he developed jaundice. He was a robust man of 52 years who had never had any previous illnesses, who did not smoke, and who was practically teetotal. His son, aged 18, had had jaundice for two weeks—four weeks before the patient contracted it—and the patient himself had had it for five weeks before he was sent to the County Hospital, Otley He had continued to work almost up to the day of admission, Oct. 23, 1942. The incubation period of four weeks is mentioned by Dr. W. N. Pickles (1942) in his Milroy lectures. He also remarks that the disease frequently visits Wensleydale, and we have noticed quite a crop of cases in Wharfedale during the past two years.

By the time the patient was admitted he had lost a considerable amount of weight, largely owing to anorexia, which had caused him to take practically nothing to eat during the two previous weeks. He was profoundly jaundiced, and suffered from intense itching of the skin due to this. His stools were clay-coloured, and his urine was loaded with bile pigments and contained a small quantity of urobilinogen. His liver was grossly enlarged, extending down to the umbilicus, and its surface smooth; his spleen protruded four fingerbreadths below the left costal margin on inspiration and felt very hard. Examination revealed no other noteworthy physical findings, and the nervous sytem was normal.

A blood count on admission gave the following results: R.B.C., 4,800,000; Hb, 98% Sahli (throughout); C.I., 1; W.B.C., 3,300—polymorphs 58%, lymphocytes 33%, monocytes 5%, eosinophils 2%, ribbon forms 2%. The polymorphs showed toxic granulations. The van den Bergh test gave a direct positive result. The Wassermann test was negative.

The patient was put on a carbohydrate diet with copious glucose drinks, and vitamins in the form of Abbott's pentacaps 2 t.d.s. for the first three weeks. By that time his appetite had completely returned, and he then took a normal diet with added carbohydrate drinks. The leucopenia was checked again on Oct. 29 and Nov. 4 and 12, and showed totals and differentials very similar to the original count except that the percentage of ribbon forms rose to 12.

Towards the latter end of this period we had noted with concern that, although the patient was improving generally and eating well, a greenish-grey pallor was showing through the jaundice, so on Nov. 20 we did another complete blood count, and were astonished to find: R.B.C., 2,300,000; Hb, 63%; and C.I., 1.37. The film revealed slight anisocytosis, with macrocytosis, hyperchromia, polychromasia, and a few nucleated red cells. The white cell count—3,200—and the differential count showed no significant change from those noted above. The reticulocytes appeared to be approximately normal, although an actual count was not made on this specimen.

A sternal puncture was done immediately, and after examination the smears were sent to Edinburgh. Prof. L. S. P. Davidson and

Dr. L. J. Davis reported on them as follows: "The film is a 'thin' one in which marrow cells are scanty. Marrow cells of all types are present. Erythropoiesis is normoblastic; although a number of basophil erythroblasts are present, megaloblasts typical of pernicious anaemia in the relapse stage are not seen. No gross abnormality is noted in the white cell series; there is perhaps an increase, however, in the proportion of promyelocytes."

Unfortunately, owing to a technical difficulty, we could not at this time carry out a fractional test meal examination, but on Nov. 25 we were able to do so. It showed a mild hyperchlorhydria, delayed emptying, and bile in the first three and last three specimens. Mucus was present only in the fasting juice.

Liver injections were started on Nov. 20—initial dose 8 c.cm. neohepatex Evans, 2 c.cm. daily for seven days, then 2 c.cm. every other day for two weeks. This was not sufficient, and so 2 c.cm. daily was given from Dec. 10 until Jan. 6, 1943, when it was stopped to see if a relapse would occur. We should like to emphasize that liver was the only haematinic given.

A second sternal puncture done on Nov. 26 showed an essentially similar picture. There were then 6.7% reticulocytes, and the haemoglobin was 73%. Further reticulocyte counts showed: Nov. 28, 3.5%; Nov. 30, 3.6%; and Dec. 2, 2.8%. By Dec. 4 the haemoglobin was 85%, R.B.C. 3,700,000, and C.I. 1.15; and on Jan. 5, 1943, at the end of liver therapy, Hb 92%, R.B.C. 3,900,000, and C.I. 1.25, and the white cells had risen to 7,400. A further count, on Jan. 19, gave Hb 95%, R.B.C. 4,400,000, C.I. 1.1, and W.B.C. 10,700. Reticulocyte counts done during this period were normal.

Meanwhile the patient's clinical condition was steadily improving. The jaundice was slowly disappearing, his appetite was excellent, his liver and spleen were both receding, and he was beginning to gain weight. His condition on Jan. 26 was very good; he had gained 16½ lb. in the last four weeks, and weighed 11 st. 13 lb. He could undertake without fatigue a stiff uphill walk of an hour's duration to his home on the moor-tops. His liver was still palpable and his spleen only just palpable. The faintest trace of jaundice could be seen in his skin and sclerotics. The van den Bergh reaction continued to be positive direct until Feb. 26, but on April 14 and May 14 the results were negative. A blood count on June 9 showed Hb 95%, R.B.C. 4,750,000, and C.I. 1. No trace of jaundice was then to be seen. The liver and spleen were just palpable. The patient's general condition was excellent.

Comment

We feel that the response to liver therapy certainly suggests that the anaemia was due to lack of liver principle; on the other hand, it is conceivable that the improvement in the blood picture might have occurred spontaneously after the patient's recovery from his infective condition. The reticulocyte response would, however, support our own view.

Regarding spontaneous recovery, it is interesting to note that in the only case of macrocytic anaemia associated with acute catarrhal jaundice about which we have been able to read so far (Wintrobe and Shumacker, 1933), spontaneous recovery did occur. In their case, however, the origin of the jaundice was not so clear, there was no splenomegaly, and there was a histamine-fast achlorhydria to begin with. The anaemia cleared in 24 days, whereas in the present case, even assisted by liver extract, recovery to the level of 4,400,000 took 52 days. These authors encountered macrocytosis in 11 out of 43 cases of hepatic disorder, and of these eleven the case quoted above was the only one suffering from acute catarrhal jaundice. They performed necropsies upon 8 cases, and note that the pathologist described the extent of the liver destruction as extreme in the very same four cases in which hydrochloric acid was found in the gastric contents, but that no such comment was made in the other four cases, in which achlorhydria was present.

We are aware that this case is unsupported by mean corpuscular volume figures and that other investigations might with advantage have been carried out, but we feel that the case has sufficient importance to warrant publication if only so that others may be aware of the possibility of a grave anaemia complicating acute infective hepatitis and be prepared for it to be of liver-deficiency type.

We have during the conduct of the case enjoyed the most helpful and encouraging correspondence with Prof. L. S. P. Davidson and Dr. L. J. Davis of Edinburgh. I have to thank them, too, for permission to quote the above report from one of their letters.

REFERENCES

Pickles, W. N. (1942). *Univ. Leeds med. Mag.*, **12**, 70.
Wintrobe, M. M., and Shumacker, H. S. (1933). *Johns Hopk. Hosp. Bull.*, **52**, 387.

AETIOLOGY OF THE FIBROSITIC NODULE: A CLINICAL CONTRIBUTION

BY

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The term "nodule" is employed in the title of this paper (which expresses my own views alone) as it is one that has been familiarized by custom. It has seemed, however, that the existence of a nodule definite enough to be palpated in the muscles of a sufferer with fibrositis must in most cases be a sign of chronicity of the complaint, and that the "myalgic spot" is probably an earlier stage of what later becomes a nodule if left untreated. The discrepancy in the frequency with which nodules are found in this disease in England and in America can be explained by this hypothesis.

The myalgic spot is an area of hyperaesthesia in the substance of a muscle or its tendinous sheath which gives rise to pain either in the same locality or referred to a distance, when stimulated. We owe mostly to Kellgren the description of this referred pain and its distribution. These spots are generally multiple, and occur in the powerful muscles of the back and of the gluteal region, often towards the edge of the muscle where it blends with the more fibrinous portion. They may also occur, but less often, in the peripheral muscles, and in the anterior muscles of the trunk.

The aetiology and pathology of the myalgic spot or nodule are unknown, although trauma is believed by most observers to play a part in its development. It is thought that the observations recorded below throw some light on the aetiology in a proportion of cases.

Observations of Acute Myalgia

An epidemic of influenza was recently studied in which severe pain in the lower back was an early and prominent symptom in nearly every case. Some patients also complained later of pains in the thighs, calves, and arms. The cases comprising this epidemic were all of the "febrile" type described by Horder and Gow (Price's *Medicine*, 1941) as being of abrupt onset, with pyrexia and associated malaise and headache in addition to the pains described above. The pyrexia was high for three to five days, and was accompanied by a moderate degree of catarrh, chiefly affecting the eyes. Defervescence was by rapid lysis, and a leucopenia was present in most cases. None of the 40 patients examined had any previous history of rheumatism.

It was noted in the course of this epidemic that, although the acute lumbar pain was diffuse, severe, and resulted in spasm in some cases, by careful examination it could be found that it radiated from localized hypersensitive areas in the adjacent muscles, and that the position of these areas approximated to those usual in cases of ordinary lumbago. The same observation was made in cases in which the pain was in the limbs. In one instance severe "crampy" pain in the upper portion of the rectus abdominis muscle was also present—the clinical picture being comparable to that of epidemic myalgia (Bornholm disease). This pain was entirely relieved by an injection of procaine at the focal point.

The subjective pain disappeared after two or three days, but these myalgic spots were found by palpation to be still present, although the patient was not aware of them. When found and pressed on, he felt a sudden sharp pain which made him wince momentarily and which was—in about half the cases examined—referred in addition to the whole area previously affected. The number of such spots which could be discovered in any patient tended progressively to decrease as time went on.

The same group of patients were again examined two months after their influenza, when it was found that only in rather less than half of them could these spots still be found. In these cases, as before, the patient was himself unaware of their presence until examination. Three cases deserve special mention.

Reports of Three Cases

Case 1.—A civilian aged 40 had a sudden onset of headache, with pain behind the eyes, sweating, and malaise. Pain in the back had occurred several hours previously, and this got progressively worse. For this reason the patient preferred walking about to lying in bed, although his temperature was 102.6°. On examination he looked ill and was sweating profusely. The eyes were congested and the tongue furred. Pain in the back was evidently severe, and the muscles appeared to be in spasm. Urine and stools were normal, and no malarial parasites were present in the blood. The white cell count was 5,000. Next day he was much better. There was still pain behind the eyes and in the back. The temperature was normal. Myalgic spots were found in the lumbar region. The patient made an uninterrupted recovery until three weeks later, when he developed mumps. The pain then returned to the lumbar region as at first, although not so severely, for two days, during which the temperature was raised above 100° F.

Case 2.—A civilian aged 27 complained of sudden onset of severe pains in head, back, and legs, with a feeling of pyrexia, the previous afternoon. Temperature was 101.6° and pulse 90 when seen, and he was sweating profusely. No shivering; bowels rather loose on previous day but now constipated. Patient looked ill; tongue lightly furred. On examination nothing abnormal was found in the abdomen, and there were no malarial parasites in the blood. W.B.C. 3,400. The pains had prevented much sleep previously, but sedatives gave some relief. One week later pain and other symptoms had entirely gone, and the patient had resumed work. Pain could, however, be provoked momentarily by pressure on the myalgic spots which still persisted in the lumbar region and along the border of the ilium on both sides. Two weeks later the condition was unchanged, excepting that fewer of these spots could be found. Those present were carefully marked. Five c.cm. of blood, taken in the first 12 hours from a patient who had just developed sandfly fever, was then injected intramuscularly—by permission—and on the next day a pyrexial attack with a maximum temperature of 101° developed, and lasted 36 hours. The patient complained of lumbago from the onset of this pyrexia, and on examination it was found that this pain was originating from the spots which had been marked. It was easily abolished by injecting 1% novocain into them. One month later this patient was still found to have three myalgic spots in the lumbar region of which he was completely unaware.

Case 3.—A gunner aged 22 experienced a sudden onset of severe occipital headache with pains in back and legs. Temperature 101°. On examination he looked, and felt, very ill. There was marked congestion of the conjunctivae, and the bowels had been rather loose for two days. Tongue moist, with light-brown fur; abdomen normal; stools and urine normal; W.B.C. 4,200. Pains disappeared on third day; temperature normal and all symptoms gone on fifth day. Two weeks later the patient stated, when seen, that he was perfectly fit, but well-defined myalgic spots were found in the lumbar region. On pressure these referred a pain down the legs entirely comparable to that which had occurred during onset of fever. This patient was seen again a month later for another reason, and volunteered the information that similar pains had returned, although in a less degree, for a short period a few days previously while a cold in the head was developing.

From these observations it seems that infection with the organisms of influenza will produce acute muscular pain which can be shown to be referred from myalgic spots that develop in the region of the affected muscles. The spots appear to resemble those found in cases of ordinary lumbago. A large proportion of the spots which were seen to develop in the present series of cases disappeared a few days after the termination of the influenza, but some of them survived.

It does not seem that these myalgic spots are a specific reaction to the virus of influenza as such, however, in view of the fact that the pain returned temporarily in the same areas during an attack of mumps which one of the patients (Case 1) developed spontaneously during convalescence. This view was confirmed experimentally by inducing an attack of sandfly fever artificially in a patient convalescent from influenza (Case 2), with the same result. It also seems possible (Case 3) that periodical attacks of the common cold or other mild virus infection may prove to be a factor in keeping myalgic spots which have arisen in this way active, although confirmatory evidence is lacking. If this were found to be so it suggests an analogy with the "maintenance dose" in other fields.

Observations on Myalgia following Exanthemata

It is well known that acute muscular pains may arise in the course of, or after, many of the acute infectious diseases other than influenza—chiefly, it would seem, those of virus origin. A considerable number of patients complaining of pain that had arisen in this way have been examined during the past year. These pains have also in the majority of cases been found to have their origin in well-defined hypersensitive myalgic spots from which the patient's myalgia or "neuritis" (muscular tenderness) was referred. The diseases which most commonly give rise to this syndrome appear to be sandfly, glandular, undulant, and scarlet fevers, measles, and rubella. Myalgic spots arising during the course of one of these diseases have been found to be still present two months later, this being the longest period during which a "follow-up" proved possible in this series.

The description already given of the myalgic spots arising during the epidemic of influenza applies equally to those arising in this series, and justifies the belief that they may appear during the course of almost any acute infectious fever, and that a certain proportion will persist unknown to the patient until such time as they may subsequently become reactivated.

It seems probable that factors such as chill, damp, trauma, and mild focal infection, which have sometimes been held to be causative, are in fact of secondary importance, and will provoke an attack of fibrositis or myalgia only in the presence of latent myalgic spots formed previously in this way. The method by which they actually provoke an attack may possibly be by inducing a local oedema in the sensitive area, whereby the victim becomes aware of the myalgic spot and of the pain referred from it. If this is so it accounts for the nodular feeling which is not infrequently remarked at these points, and the fact that this can sometimes be rubbed away by a skilful masseur.

Summary

The role of "myalgic spots" or "rheumatic nodules" in fibrositis is discussed.

In a recent epidemic of influenza in which lumbar and other pain was a prominent feature it was observed that this pain was also referred from small hypersensitive areas in the muscles. These were indistinguishable from "rheumatic" myalgic spots. On re-examination of the patients after one and two months these spots were still found to be present, although in diminishing numbers. The patient was, however, invariably unaware of this fact until pressure from the examining finger disclosed them. None of these patients had any previous rheumatic history.

Myalgic spots which had arisen during influenza were reactivated in one patient by an attack of mumps which arose spontaneously during convalescence. In another case this occurred as the result of the artificial induction of an attack of sandfly fever by the inoculation of infected blood. It appears, then, that myalgic spots can arise *de novo* in the course of acute influenza, and that these will persist in a proportion of cases. They can, however, be reactivated by infections of other types. In one case there was evidence suggesting that the common cold provided the means for maintaining the activity of the myalgic spots.

Rheumatic pains are a characteristic sequel of many of the exanthemata, mostly those of virus origin. Observation has shown that these pains, which tend to arise in a less acute manner, are also generally of the focal type.

The final suggestion is therefore that the myalgic spots which it is now widely agreed form the basis of many of the rheumatic syndromes of later life are sometimes a legacy from acute infections in earlier years. It is important to remember that the victims are often unaware of their presence until they become activated by factors such as chill, trauma, or focal sepsis. These factors should consequently be regarded as secondary and no longer causative in such cases.

My thanks are due to the D.M.S., Paiforce, and to Major-Gen. R. E. Barnsley, *M.C.*, D.D.M.S., Southern Command, for permission to publish this paper, and to Dr. H. Jamieson, chief medical officer of the Anglo-Iranian Oil Company, for his help.

Thirteen out of 20 patients with eclampsia were found by M. Rosenbaum and G. L. Maltby (*Arch. Neurol. Psychiat.*, Chicago, 1943, **49**, 204) to have electro-encephalograms indicative of cerebral dysrhythmia. They compare this with the finding of similar changes in only 2 out of 20 patients with pre-eclampsia. Twelve of the eclamptic patients had a family and personal history of convulsive disorders. The authors therefore suggest that in eclamptic patients there may be a primary cerebral dysrhythmia, and that the associated toxaemia may be the "trigger mechanism" which sets off convulsions.

VITAMINS AND PHYSIOLOGICAL FUNCTION

BY

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AND

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A report has recently appeared from Manchester University of some observations in which a short period of supplementary feeding with vitamins produced significant changes in physiological function (Harper, Mackay, Raper, and Camm, 1943). The supplement, consisting of 6,000 I.U. vitamin A, 1,000 I.U. vitamin D, and 50 mg. vitamin C daily, was given to 35 cadets aged 18 to 19 for a period of 10 weeks, while 34 cadets received control pellets and capsules. At the end of 10 weeks the groups were changed over, so that the control group now received the vitamins for 11 weeks. The cadets had recently joined the Forces; during their training they were receiving, at the University refectory, a diet similar to that of the undergraduates. It was found that the group receiving the vitamins were superior in several respects to the control group: the vital capacity, breath-holding time, endurance (R.A.F. 40-mm. mercury test), and, surprisingly, the resting pulse rate, were all considerably increased in the vitamin-fed group. In addition there was a significant difference in the number of days during which the cadets complained of minor respiratory or gastro-intestinal disorders, those receiving the pellets having on the average 9.7 days of complaints per man, compared with 14.9 days per man in the control group. On the other hand, no difference was found in height, weight, chest girth, or pelvic measurement, nor in the standing pulse rate, the pulse rate during the R.A.F. endurance test, the post-exercise pulse rate, or the post-exercise vital capacity.

As it happened that elementary-school children were available in Cambridge who, in the course of other investigations, had been receiving vitamin pellets for a year, it seemed that the opportunity might usefully be taken to examine the general applicability of the findings of the Manchester investigators. To this end we have repeated the tests on the four functions which these workers found to be affected.

Experimental

Altogether 178 children have been examined; these comprised 80 12-year-old girls, 76 12-year-old boys, and 22 11-year-old boys. About half in each group—alternate children from the school register—had received vitamin pellets daily at school and the remainder control pellets. The vitamin pellets contained 5,000 I.U. vitamin A, 1 mg. vitamin B_1, 25 mg. vitamin C, and 500 I.U. vitamin D. The children were living and eating at their homes, except for some who had dinner at school. Allowing for week-ends and holidays, the average supplement over the year was roughly half the reputed daily requirements of these nutrients; apart from the vitamin B_1, which Harper *et al.* did not administer, the children were thus obtaining less of the supplemented vitamins than the subjects at Manchester.

The heart rate was measured over a half-minute period after the children had been sitting quietly and comfortably for 15 minutes, and again after a further 5 minutes. Preliminary tests had shown that this procedure gave much more consistent results than measurements taken with the children lying down.

The vital capacity was measured after the heart rate had been taken. It was found that the first one or two attempts were usually lower than subsequent attempts. Readings were therefore made until fairly consistent results were obtained, and the highest of these was taken as the true vital capacity; five or six attempts were usually sufficient. Owing to the variation in heights and weights of the children the vital capacity has been divided by the surface area in order to obtain a truer comparison.

Breath-holding was the time in seconds during which the subject could hold his breath after full inspiration, and the endurance test the time in seconds during which the subject could maintain, after full inspiration, a column of mercury at a height of 40 mm.

Half of the 12-year-old boys were examined three days after the completion of a vitamin C saturation test, during which they each received 70 mg. vitamin C daily per stone body weight (i.e., some 350 mg. daily on the average) for 5 successive days. A comparison was made of these 38 boys with the 38 who were not given the saturation test (Table I). (It might be mentioned that all the boys subjected to the saturation test became saturated within the five days of the test, the majority within the first two days.) It will be seen that the differences between the "saturated" and "unsaturated" boys were in each case very small, and statistical treatment is hardly necessary to demonstrate that these differences are insignificant. We have nevertheless subjected some of the bigger differences to statistical analysis—for example, the apparent higher vital capacity in the "saturated" boys—and in each case the difference is not significant. This was also true when the "vitamin" group and the control group were combined.

TABLE I.—*Effect of Saturation with Vitamin C on Physiological Function*

	Boys Receiving Vitamin Pellets		Boys Receiving Control Pellets	
	Saturated	Not Saturated	Saturated	Not Saturated
Number examined	19	19	15	23
Average resting pulse rate (beats per min.)	82·2	83·8	77	82
Average vital capacity (ml.) ..	2,310	2,142	2,297	2,145
Average vital capacity/sq. metre body surface	1,862	1,710	1,840	1,770
Average breath-holding time (secs.)	39·0	41·7	36·4	35·4
Average endurance test (secs.) ..	27·2	25·8	26·4	23·1

TABLE II.—*Effect of Vitamin Supplements on Physiological Function*

	Boys, 12 Years Old		Boys, 11 Years Old		Total Boys		Girls		Total Subjects	
	Vitamin Group	Control Group	Vitamin Group	Control Group	Vitamin Group	Control Group	Vitamin Group	Control Group	Vitamin Group	Control Group
Number examined	38	38	10	12	48	50	39	41	87	91
Average resting pulse rate (beats per min.) ..	83	77·6	86·8	90·4	83·6	80·8	88·2	87·8	85·8	85·4
Average vital capacity (ml.)	2,213	2,200	2,010	2,164	2,185	2,196	1,916	2,064	2,064	2,135
Average vital capacity/sq. metre body surface	1,792	1,800	*	*	1,770	1,818	1,638	1,600	1,690	1,712
Average breath-holding time (secs.)	40·4	35·8	34·8	39·7	39·3	36·4	34·2	32·2	37·0	34·5
Average endurance test (secs.)	26·4	23·9	22·8	25·0	25·7	24·5	18·7	21·1	22·8	23·1

* Surface area not available for all subjects.

We can therefore consider the "saturated" and "unsaturated" boys together, and compare those who had received the vitamin supplements with those who had not. Table II shows this comparison, together with the girls and the 11-year-old boys; none of the girls or the 11-year-old boys had been subjected to the vitamin C saturation test before the examination for physiological function.

It is evident from simple inspection that no significant difference exists between the subjects receiving the vitamin supplements and the controls. Such small differences as occur are often in opposite directions; thus the boys on the vitamin pellets have an average vital capacity, expressed as a function of their surface area, of 48 ml. less than that of the control group of boys; in the girls the value of the "vitamin" group is 38 ml. more than the control group. Also, considering all the children, whereas the average breath-holding time is higher in the vitamin group, the average vital capacity and the endurance time are slightly lower. Again statistical analysis confirms that none of the differences are significant.

Discussion

The Manchester workers have themselves pointed out some possible criticisms to which their results might be open. In particular, they refer to the small number of their subjects. Additional queries arise even although their results are statistically outside the limits normally accepted for chance variations (see Abrahams, 1943; also *British Medical Journal*, 1943).

If, however, we accept the validity of the findings of these workers, the fact that vitamin supplements did not induce such changes in physiological function in our subjects might possibly be due to their not having been deficient in these nutrients before the administration began. This is supported by the fact that there was also no improvement in other respects after the year's dosing (see Yudkin, 1943). Gain in height and weight, strength of grip, haemoglobin, intelligence, educational attainment, and dark-adaptation were no different in those children receiving the supplement from what they were in those receiving the control pellets. Moreover, although there was a reduction in the incidence and duration of colds in the vitamin group, this was seen only in the younger children and was not shown by the older children examined for physiological function.

It should be emphasized that the absence of effect in our subjects may be due to differences in age or in degree of deficiency; they are not therefore to be interpreted as contradicting the findings of Harper *et al.* Nevertheless it is clear that improvement of physical efficiency by vitamin supplements cannot be regarded as being generally applicable to all groups.

Summary

A group of 178 children aged 11 and 12 were examined after about half of them had received vitamin supplements daily at school for one year. The supplements provided each school day 5,000 I.U. vitamin A, 1 mg. vitamin B_1, 25 mg. vitamin C, and 500 I.U. vitamin D, the average addition over the year being about one-half of the reputed daily requirements of these substances.

No difference was observed between the control group and the supplemented groups in resting pulse rate, vital capacity, breath-holding, or 40-mm. endurance test.

REFERENCES

Abrahams, A. (1943). *British Medical Journal*, **1**, 394.
British Medical Journal (1943). **1**, 417.
Harper, A. A., Mackay, I. F. S., Raper, H. S., and Camm, G. L. (1943). Ibid., **1**, 243.
Yudkin, J. (1943). *Lancet*, **1**, 755.

THE CRY OF THE CHILD IN UTERO

BY

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"Vagitus uterinus" is the term applied to the crying of the child while its head is still in the uterus. Mohammed and St. Bartholomew are both supposed to have made themselves heard *in utero*. It may be of importance in medico-legal cases, as it is possible in this way for a child to be stillborn and yet have its lungs partly aerated. In some cases this cry of the child may also be a warning of foetal asphyxia, requiring a rapid delivery.

Record of a Recent Case

Mrs. T., a primigravida aged 29, was sent up to the London Hospital at 40 weeks with a breech presentation. External version under anaesthesia failed and she came into labour spontaneously two days afterwards. The membranes ruptured after 27 hours with the cervix fully dilated, and 1½ hours later it was decided to assist delivery as the anterior buttock had been peeping without advance for half an hour and the mother was becoming distressed. The foetal heart rate was 160 a minute. The resident accoucheur performed a postero-lateral episiotomy under gas, oxygen, and ether, with the patient in the lithotomy position, but was unable to bring down a leg as there was little liquor. The registrar therefore took over, and just as he was passing his hand gently up the vagina the foetus was felt to give a convulsive movement and everyone in the labour theatre heard a "foetal cry." This was repeated twice more, and was accompanied by movement of the foetus. The cry was loud, and was heard by three doctors, two hospital sisters, and three nurses; and all this when the anterior buttock was just peeping at the vulva. Rapid delivery was performed, bringing down the legs and arms, and forceps was applied to the after-coming head. Although this was done quickly the foetus was making strong inspiratory efforts during delivery. The female infant of 6 lb. 6 oz. was very cyanosed, but breathed at once and recovered rapidly.

Discussion

For this condition to occur it is necessary for air to be present in the uterus. This may be due to the suction of air along the examining hand during the relaxation of the uterus, as probably occurred in this case. If the patient had been delivered on the left side there would have been a tendency for gravity to pull the foetus and uterus out of the pelvis and so suck air into the vagina or even the uterus. Miss Field at the meeting of the Obstetric Section of the Royal Society of Medicine on March 19, 1943, described a case in which air rushed up the catheter during high rupture of the membranes and was followed by foetal crying, and 54 hours later by the delivery of a living child. Mr. Fraser's case at the same meeting was harder to understand. A 4-gravida, 30 weeks pregnant, ruptured her membranes five days before delivery. Twenty-four hours before delivery the foetus was heard to cry *in utero* for 40 minutes with the os only one-fifth dilated. Tympanites and succussion splash were present. The premature foetus died with a cerebral haemorrhage three hours after delivery. Air was perhaps sucked into the uterus during a uterine relaxation, or by the piston-like action of the foetal head. Although afebrile there may have been a low-grade infection with gas-forming organisms.

Once there is air in the uterus the foetus must inspire in order to produce a cry. There are at least two types of intra-uterine cry. The first is a soft whimpering cry—best heard with a stethoscope to the abdomen—which may continue for a considerable time and is not associated with asphyxia of the infant. This was the type of cry in the latter two cases. The second type was found in our case, in which the cry was loud and gasping, and was accompanied by a convulsive movement of the foetus and associated with foetal asphyxia.

The work of Barcroft and Barron on the respiratory centre of lambs *in utero* throws light on this problem. The movements responsible for respiration can be traced back to the first efforts that the foetus makes, and it seems that a third of the way through pregnancy the essential neuro-muscular mechanism has been laid down and as it were tried out. At first the respiratory movements occur as a reflex to a stimulus. This becomes more sensitive and the response more differentiated, but, later, with the development of the controlling higher nervous centres the foetus again becomes inert. With the onset of labour there is a degree of anoxaemia which depresses the inhibiting higher centres, so that the foetus shows more movement. There is also an increase of CO_2 pressure, and an avalanche of sensory impulses which all have a large stimulating effect on respiration.

In the first group there is a gentle whimpering cry which is unassociated with asphyxia and occurs before or early in labour. This noise is due to air passing in and out of the chest, whereas normally there is a tidal flow of liquor. In these cases the foetus can be stimulated by prodding, when the cry may be louder. In the second group the type of respiration is gasping, is associated with foetal asphyxia, and occurs when labour is well advanced. It has been shown by Barcroft that transection of the brain-stem above the level of the hypoglossal nucleus in the sheep foetus causes this form of respiration, and it is suggested that this gasping type of cry in the human foetus is due to anoxaemia of the higher nervous centres releasing the lower medulla.

Yet another possibility is that once there is air in the body of the uterus it may be suddenly forced past a fold of membrane or vagina by a contraction of the uterus. A noise simulating a foetal cry might thus be produced. Sipple's case was quoted in the *British Medical Journal* of Sept. 14, 1912. While carrying out an internal version he had to hold his hand still during a contraction. At that moment there were two high-pitched noises just like an infant's cry, but he noticed that they were accompanied by a sensation of air running up his forearm.

It is probable that this condition is more common than supposed. Prof. F. J. Browne has found that the lungs of stillborn foetuses often float in water, which shows that some aeration has taken place. This post-mortem test of stillbirth is thus of little significance. DeLee said that he has heard babies sneeze and cough *in utero*, and even hiccup.

We have seen that at an early date in development the movements of respiration have been tried out. For a cry to be heard, however, there must be air in the uterus, with a variable degree of foetal anoxaemia, rise in CO_2 pressure, and peripheral stimulation. The cry will be quiet and whimpering if the asphyxia and peripheral stimulation are slight, but loud and gasping if these are severe. It is in the last group that the foetus is distressed and requires immediate delivery. In our case there is little doubt that air was drawn into the uterus along the examining hand between pains, and the long second stage and prolonged manipulation caused partial asphyxia and stimulation of the foetus. Rapid delivery possibly saved the child's life.

I must thank Mr Eardley Holland and Mr. Alan Brews for permission to publish this case and for their help.

BIBLIOGRAPHY

Barcroft, Sir Joseph (1940). *J. Physiol.*, **97**, 338.
—— (1941). *Lancet*, **2**, 91.
—— (1942). Ibid., **2**, 117.
—— (1942). *Camb. Univ. med. Soc. Mag.*, **20**, 6.
British Medical Journal (1912). **2**, 653.
Bucura, C. J. (1904). *Zbl. Gynäk.*, **28**, 129.
DeLee, J. B. (1938). *Principles and Practice of Obstetrics*, p. 855, Philadelphia.
Gabastou, J. A. (1940). *Bol. Soc. Obstet. Ginac. Buenos Aires*, **19**, 25.
Fuchs, H. (1920). *Zbl. Gynäk.*, **44**, 1313.
Klein, C. U. von (1922). *Mschr. Geburtsh. Gynäk.*, **60**, 154.
Pease, F. W. (1942). *J. Amer. Inst. Homeop.*, **35**, 9.
Reidy, J. (1912). *British Medical Journal*, **2**, 1140.

Medical Memoranda

Paralysis of the Serratus Anterior following Glandular Fever

So far only one case of this condition appears to be recorded in the literature, and that was by J. S. Richardson (*Lancet*, 1942, **1**, 618); but in his case the paralysis developed during the third week of illness and cleared up in four months, whereas in the one which came under my observation—a persistent serratus magnus palsy following glandular fever—the paralysis developed five days later, and is still present a year after the onset.

CASE HISTORY

A soldier aged 25 developed a sore throat on April 27, 1942. A throat swab showed Vincent's organisms; culture negative for K.L.B. On May 8 there was a rise in temperature, with an erythematous rash over the chest and marked glandular enlargement in the neck on both sides. The spleen also was probably enlarged, but no enlargement of glands was noticed elsewhere. The rash disappeared after a few hours, but the temperature was still raised. It was thought to be a case of rubella, but as the patient had had a definite attack of rubella two years previously this was improbable. The glands continued enlarged and tender, and remained so for six or seven weeks.

On May 9 a white cell count gave 11,200 per c.mm.—neutrophils 29%, lymphocytes 66%, monocytes 4%, eosinophils 1%. There was severe pain in the right shoulder, with inability to sleep. On the 11th there developed severe paralysis of the right serratus anterior muscle with no sensory changes and no meningeal symptoms. Pain disappeared at onset of paralysis. The Paul-Bunnell reaction was positive in a serum dilution of 1 in 900. On the 12th the test was repeated, and was still positive at 1 in 900. Throat and nasal swabs were taken and cultured for K.L.B., but the result was negative; also, no Vincent's organisms were found.

On May 16 the white cells numbered 5,700 per c.mm.—neutrophils 39%, lymphocytes 51%, monocytes 9%, eosinophils 1%. The faradic response in the right serratus anterior was very weak. Radiographs of the cervical spine were negative. On June 22 lumbar puncture produced a clear fluid under normal pressure. No leucocytes were seen in 1 c.mm. Total protein, 45 mg. per 100 c.cm.; sterile. Since then the patient has had splinting and physiotherapeutic treatment.

On May 12, 1943, the vertebral border of the scapula, and especially the lower angle, still stood out prominently behind, giving a characteristic winged appearance to the back. The arm could be pushed forward, but weakly. I could not elicit any response to faradism or galvanism in the right serratus anterior muscle. Although the functional recovery is about 50%, it is obvious that this is due to the function of the serratus anterior being taken by other muscles, as that muscle is still paralysed.

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Reviews

LOCAL GOVERNMENT

The Municipal Year Book and Encyclopaedia of Local Government Administration, 1943. (Pp. 1,343. 42s.) London: Municipal Journal Limited.

Many new matters have appeared on the agenda of local government since the *Municipal Year Book* was first published in 1897, so many that one wonders what Victorian aldermen and councillors found to talk about. The most recent matter and the most peremptory is civil defence with its various ramifications—provision and maintenance of shelters, arrangements for evacuation, communal feeding, care of the bombed-out, fire, first-aid, and decontamination services. It was argued at first, before experience disproved it, that to add civil defence to the other functions of local government would be, not indeed the last straw, but the last big bale of hay on this patient camel's back. But that was to reckon without the adaptability and resourcefulness of those who administer local affairs, especially the permanent local government service. Never before has local government touched life at so many points, and it has its reward in a quickened public appreciation which has displaced the old apathy. It is beginning to be realized by the average citizen that his happiness, safety, and environmental health depend upon the town hall more than upon the Palace of Westminster. This most important side of community life has a guidebook worthy of it. There is not a fact or figure, name or emblem connected with local government, from the city corporation down to the seven-hundredth rural district council, which is not to be found in these 1,300 closely packed and well-sectioned pages. The yearbook is primarily a directory, but it is also an annual review of the chief events in local government, and among other things it gives a good summary of the different reports, statistics, and tendencies in the field of public health. Incidentally it shows how various is the structure of local government. In England and Wales there are 62 county councils, 83 county borough councils, more than 300 councils of other municipal authorities, and nearly 600 urban district councils. A growing feature and sign of things to come is the number of joint boards and committees, covering water and gas, sewerage and burial, and in Scotland poorhouses and district asylums, venereal diseases, and the welfare of the blind; but of all joint boards those which have to do with hospitals are most numerous, totalling 212 in England and Wales.

LARYNGEAL SURGERY

Diseases and Injuries of the Larynx. A Textbook for Students and Practitioners. By Chevalier Jackson, M.D., Sc.D., LL.D., F.A.C.S., and Chevalier L. Jackson, M.D., M.Sc., F.A.C.S. Second edition. (Pp. 633; illustrated. 36s.) New York and London: The Macmillan Company. 1942.

A second edition of *The Larynx and its Diseases*, by Chevalier Jackson and Chevalier L. Jackson, has been issued under the title *Diseases and Injuries of the Larynx*. The present edition does not differ in essentials from the first (reviewed in these columns on Oct. 16, 1937), but is longer because a chapter on war surgery of the larynx has been added. This is rather out of keeping with the rest of the book, which is almost entirely based on Jacksonian observation and experience, while the new chapter does not give any indication of personal experience in the surgery of war, except in the matter of the effects of poison gas, which so far has not been employed in the present conflict. The authors have changed their views to some extent on the surgical treatment of cancer of the larynx, but they still give a quite inadequate picture of what can be accomplished in the surgical treatment of the intrinsic variety of the disease, and the statement that in the "*extrinsic type of cancer surgery is worse than useless*" ignores what has been accomplished by others, and coming from such an authority must hinder any attempts at progress in this direction. In all other aspects of laryngeal surgery the book reveals what can be done by patient endeavour often extended over long periods, and how great is the debt of laryngology to endoscopy as practised and taught in the Jacksonian clinic. The book is of more value as a picture of how a great master of his art sees it and practises it than as the complete textbook at which he has aimed, for there is no attempt to keep abreast of recent

literature ; for the authors the Jacksonian practice and tradition are all-sufficient. It constitutes, however, a valuable record of magnificent work in laryngology, which no laryngologist can neglect.

AFTER-CARE AND REHABILITATION

After-Care and Rehabilitation. By Various Authors. (Pp. 128. 8s. 6d.) London: The *Practitioner* in conjunction with Eyre and Spottiswoode.

This is the ninth of the series of "Practitioner" booklets. It deals with every aspect of after-care and rehabilitation in a comprehensive and easily readable form. There are twelve articles dealing with post-operative care, with the after-care of various medical conditions, and with rehabilitation after head injuries, fractures, and amputations. There is also a chapter on physiotherapy in post-operative convalescence, and a chapter on occupational therapy. All these papers are well and clearly written by experts, and if there is any fault to find with this booklet it is that there has been a certain amount of overlapping in the chapters on post-operative care.

One of the most useful and practical features of the book is the chapter by Dr. Geoffrey Evans on rehabilitation in patients confined to bed, in which is given some extremely practical and detailed advice on the types of exercises to be employed in these cases. All the chapters are of a high standard, and the book should have a very wide appeal. Prof. F. R. Fraser sums up the present position in an excellently written foreword urging a more positive and planned attitude on the part of the profession towards what used to be rather vaguely described as "convalescence."

Notes on Books

Volume 67 of the *Transactions of the American Gynecological Society*, for the year 1942, is edited by Dr. HOWARD C. TAYLOR and published at St. Louis by the C. V. Mosby Company. The papers in this volume are without exception reprinted from the *American Journal of Obstetrics and Gynecology*. The "In Memoriam" section includes an appreciation of Dr. Herbert R. Spencer, an honorary Fellow of the Society, by his friend Dr. George Gray Ward, who met him on various yearly visits to London.

E. B. UVAROV'S *Dictionary of Science* (Penguin Books; 9d.) is a work which is remarkable both for the wealth of matter included and for the clarity with which the subjects are explained. Hardly a word is missing in it that may occur in scientific literature, and wherever an enlargement of the given explanation may be desired a further store of information will be found under a kindred title to which a cross-reference is given. Complete, compact, and lucid, this volume is worth a bookbinder's finish.

Starch and its Derivatives (Chapman and Hall; 36s.), by J. A. RADLEY, is in essence a textbook of applied chemistry having starch for the centre of its interest. Starch itself presents a wide field of study in pure chemistry; it has many and diverse uses in industry and in the arts, and is the raw material for making a variety of economic products. There is here a large field for both pure and applied chemistry, and there have been extensive developments in both domains. These developments are here fully and ably described.

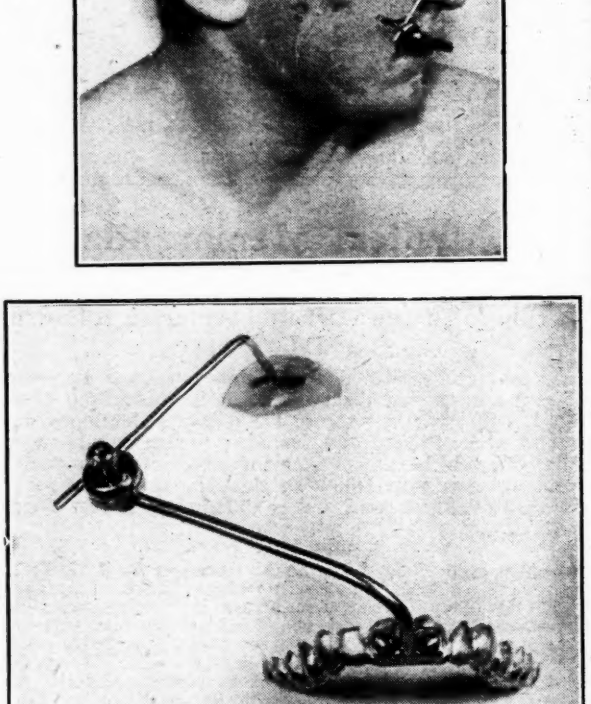
Preparations and Appliances

A DEVICE FOR THE PROTECTION OF THE EXPOSED CORNEA

Mr. FREDERICK RIDLEY, F.R.C.S., writes:

From time to time cases are seen in which the cornea is exposed owing to loss of tissue or cicatricial contraction of the lids following burns. A case recently admitted to an E.M.S. hospital presented unusual difficulties. An extensive area of skin around the eye and including both lids was involved in a third-degree burn complicated by gross sepsis. The lids retracted rapidly, exposing the cornea, which became oedematous and threatened to ulcerate. The raw area round the eye would not tolerate any appliance, the skin condition did not permit of immediate grafting, and lid suture has always failed in this type of case.

The problem was tackled by means of the appliance illustrated. A dental cap splint with an extra-oral extension bar attached by means of screws and plates was fitted, and to this bar a second rod carrying a shield to fill in the palpebral aperture was attached by means of a universal joint of the Clouston-Walker pattern, provided with a locking screw. A Zeelex impression of the palpebral aperture and exposed cornea and conjunctiva was taken, using a suitably curved and shaped small metal tray. Artificial stone moulds were prepared and the shield processed in acrylic resin in the usual way. The rod carrying the shield was cast integrally with it, as is shown in the illustration. The sharp edges of the shield were removed, the tips corresponding to the canthi rounded off, and the ocular



surface lined with a thin layer of No. 8 gauge dental casting wax. Experience has shown that this wax is very well tolerated in contact with the cornea. If the shield shows a pronounced corneal bulge it is desirable to remove this by polishing or to fill the hollow with wax, as the cornea moves freely over the ocular surface of the shield.

The apparatus was made and fitted within six hours and proved comfortable in use, being adjusted so that the shield is just in contact with the cornea. As the cicatricial contraction increased, the appliance was built up with wax to maintain approximation to the lid edges. After ten days a larger shield was made, and this was subsequently built up in the same way. Apart from removal each day to irrigate and inspect the eye, the apparatus was worn day and night for seventeen days without discomfort. At the end of that time the skin was ready for grafting. Apart from a little injection of the conjunctiva no reaction was seen. The corneal oedema cleared up in a few hours and no further anxiety was experienced.

It is hoped that this apparatus, which can be prepared quickly in the larger dental units, may prove of value in the care of this rare but often disastrous condition.

My thanks are due to the staff of the dental department of the Maxillo-Facial Unit, East Grinstead, for their co-operation in planning and preparing the apparatus.

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THE PENICILLIN POSITION

We print on p. 274 a statement on penicillin from the Medical Research Council, the object of which is evidently to warn the profession that supplies of this substance are unlikely to be available for general use for some considerable time—possibly until the end of the war, since Service needs will certainly be met first as long as it continues. The amount available at present is so small as to make it inadvisable to advertise the names of centres where its use is being studied, lest they should be overwhelmed with requests to treat cases which can only be declined. The object of the clinical work going on at present is indeed not so much to treat conditions already known to be amenable to penicillin treatment as to explore its further possibilities. Something will doubtless be heard shortly of the further progress of this work, and in the meantime readers of this *Journal* may like to be reminded of the main facts which are already known, especially since the subject has attracted a good deal of popular interest.

Penicillin is an antibacterial substance with a highly selective action formed by the mould *Penicillium notatum* and easily obtained in crude form in filtrates of cultures of this mould. Discovered by Fleming as long ago as 1929, it was restudied by Florey and his colleagues at Oxford after the war began, and by them a method was devised of extracting and partially purifying it, the result being an antiseptic having unheard-of properties. At this stage their main report,[1] which is still the chief exposition of its subject, made it clear that penicillin has all the qualities of the ideal antiseptic: an enormous capacity for inhibiting the growth of certain bacteria, an efficiency unimpaired by environment—neither serum, blood, nor pus detracting from its effect—and, above all, an almost complete freedom from toxicity to mammalian cells. It is upon this rock that every other "biological antiseptic" has foundered. Gramicidin, for example, the bactericidal substance isolated by Dubos from a soil bacillus now identified as *B. brevis*, is highly toxic to animals and clearly unsuitable for systemic use, although it may have limited uses as a local application. The same is true of actinomycin,[2] proactinomycin,[3] of the unnamed substance[4] extracted from *Penicillium claviforme*, and probably of streptothricin.[5] These are only a few of the better known antibacterial products which have been isolated from various fungi in a systematic search to which the success of penicillin was the chief incentive. Among these studies, those of Raistrick and his colleagues[6] have gone furthest, since these workers not only examined very many species of *Penicillium* and *Aspergillus* and identified a large number yielding antibacterial products, but determined the chemical constitution of some of the active substances and even synthesized them. Many of these other mould products are obtainable in large yields, stable and easily purified; in some cases they act on a wider range of bacteria than penicillin, including Gram-negative species, but none has so powerful an effect on Gram-positive cocci, and none so far as present information goes is non-toxic; those which have been studied from this standpoint are decidedly the reverse. The search for something else as good as penicillin but perhaps more easily produced has therefore failed, as have efforts to synthesize it.

The product used by the Oxford workers in 1941 was still grossly impure, having an activity of only about 40 Florey units per mg. A year later[7] such further purification had been achieved that the activity was raised even to 500 units per mg., but this entailed serious loss, only about 15% of the active constituent surviving. This product completely inhibited the growth of *Staph. aureus* in dilutions as high as 1 in 30,000,000, but was even less toxic than its cruder predecessor: leucocytes survived exposure to a 1% solution. It was with penicillin thus further purified, although not always of the maximum potency attainable at such expense, that the further clinical trials were made which M. E. and H. W. Florey[8] described at length a few months ago. Systemic treatment was given in 13 cases, the continuous intravenous drip originally advocated being largely replaced by three-hourly intramuscular injections: 10 of these cases were of severe staphylococcal infections, 6 having positive blood cultures, and all recovered. A case of streptococcal meningitis resistant to sulphonamide treatment was given penicillin intrathecally as well as intramuscularly, and recovered. A favourable effect was obtained in a case of pulmonary actinomycosis, and no lasting effect at all in a case of endocarditis lenta due to *Strep. viridans*. Except in the presence of renal failure,[9] which might from this standpoint be actually an asset, penicillin is rapidly excreted by the kidney, and systemic treatment therefore demands frequently repeated doses often rising to a total of 2,000,000 units before recovery is assured. Contrasted with this lavish expenditure is the economy with which effects can be obtained by local application, the other form of treatment described in the Floreys' paper. Local sepsis, in the form of accidental wounds, mastoid disease, and chronic sinuses, was successfully treated by introducing comparatively small amounts of penicillin, as were various superficial infections of the eye. Colebrook and his colleagues[10] have also found penicillin in the form of a cream highly effective in eliminating infection from burns.

The possible uses of penicillin have to be thought of in terms of the infecting organism. Pride of place goes to *Staph. aureus*, not only because of its extreme susceptibility to penicillin, but because it is far less controllable by sulphonamides than the other pyogenic cocci. That staphylococcal septicaemia is curable with penicillin is well established, and for this condition more than any other it is being most urgently demanded. It has also been used successfully in osteomyelitis, and in staphylococcal infection of wounds, burns, and the eye. Haemolytic streptococci and pneumococci are also susceptible to penicillin, but, since sulphonamide treatment for their various infections is usually effective, penicillin need only be considered when this fails. McKee and Rake[11] have shown that sulphadiazine-resistant strains of pneumococci respond normally to penicillin; the mode of action of the two substances is undoubtedly quite different, and resistance to one is an indication for treatment with the other. What else penicillin may conceivably be found capable of may be guessed

1 *Lancet*, 1941, **2**, 177.
2 Waksman, S. A., and Woodruff, H. B., *J. Bact.*, 1941, **42**, 231.
3 Gardner, A. D., and Chain, E., *Brit. J. exp. Path.*, 1942, **23**, 123.
4 Chain, E., Florey, H. W., and Jennings, M. A., ibid., p. 202.
5 Waksman, S. A., and Woodruff, H. B., *Proc. Soc. exp. Biol.*, N.Y., 1942, **49**, 207.
6 *Chem. and Ind.*, 1941, **60**, 828; 1942, **61**, 22, 48, 128.
7 Florey, H. W., and Jennings, M. A., *Brit. J. exp. Path.*, 1942, **23**, 120.
8 *Lancet*, 1943, **1**, 387.
9 Rammelkamp, C. H., and Keefer, C. S., *J. clin. Invest.*, 1943, **22**, 425.
10 *Lancet*, 1943, **1**, 605.
11 *Proc. Soc. exp. Biol.*, N.Y., 1942, **51**, 275.

from the list of bacteriostatic titres for many species of bacteria in the original main paper by the Oxford team. Its action on tubercle bacilli, on the intestinal Gram-negative bacilli, and on *H. influenzae* is negligible. On the other hand it has a powerful action on the gas-gangrene group, which has received experimental confirmation in the studies of J. McIntosh and W. R. Selbie[12] on *Cl. welchii* infection in mice. It will thus be seen that all the major infections to be feared in battle wounds come within the theoretical scope of penicillin treatment, although its practical efficacy has yet to be proved and the best methods of application have yet to be devised. That the Services have a prior claim on available supplies no one is likely to dispute. Among other bacteria high up on the list of susceptible species are the anthrax bacillus, the gonococcus, and the meningococcus. This brief review of what is known and what fields remain to be explored will give some idea of the magnitude of the task which lies before those entrusted with prosecuting this investigation. Penicillin is in some ways the most remarkable of all the chemotherapeutic agents which have come to light in such profusion during the past eight years, and it is tantalizing that supply difficulties should bar its rapid exploitation. Where it most clearly excels the sulphonamides is in the local treatment of established sepsis; and the field for such treatment is enormous, especially in time of war. Whether to employ a given stock in the rapid restoration to health of many patients suffering from disabling but not dangerous infections, or to use it to save a single life endangered by septicaemia, must be a difficult decision to make, and is perhaps not the only dilemma which will arise as the further possibilities of penicillin treatment become known.

TUBERCULOSIS IN CHILDHOOD

Of all infectious diseases which are liable to spread in time of war, only tuberculosis has gained serious impetus in this country. That it now constitutes a grave problem everyone must be aware; but it is thought of mainly in terms of adult phthisis, and the effects in children deserve much more attention than they have so far received. Readers of this *Journal* may recall that the issue in which we published an abstract of the report of the M.R.C. Committee on Tuberculosis in Wartime[13] also contained an article[14] by Dr. Allen Daley, the Chief Medical Officer to the L.C.C., and Mr. B. Benjamin of the Statistical Branch. This paper analysed the trend of tuberculosis in London during 1938-41 and revealed an alarming increase of the disease in children: new cases of both pulmonary and non-pulmonary tuberculosis and deaths from the former all showed increases varying from 177 to 442% in 1941 as compared with 1938; the greatest increases were in the lowest age group (0–4 years), but at 5–14 years they were also far greater than among adults. Whether even these figures, which are based on notifications, fully represent what is going on may be doubted after reading the account by Dr. Marcia Hall (*Lancet*, 1943, **2**, 35) of her study of tuberculosis among evacuated children in East Sussex. The social change with which this study is concerned is evacuation and billeting, but it draws an alarming picture of the infectivity of the disease among children and well illustrates the consequences of their exposure to infection, which must everywhere be accentuated by an increase in adult disease. The method employed was the thorough examination of all home and school contacts of known cases, including radiography, estimation of the sedimentation rate, tuberculin skin tests, and in some cases examination of gastric contents for tubercle bacilli. Two evacuated children found to be suffering from the disease had infected a total of 15 other children in their billets or school classes; both had been suspected of tuberculosis in London before their evacuation, but no note had been sent to the tuberculosis officer of the reception area. Of 6 children billeted with a foster-mother who herself had pulmonary tuberculosis, 5 became infected and in their turn transmitted the infection to a number of school contacts. Several of the children involved in these melancholy episodes have died, and a number of others are undergoing institutional treatment.

The danger to children of contact with open pulmonary tuberculosis cannot be over-emphasized. That they are much more readily infected than adults would be more clearly understood if the disease in them did not assume a form which is notoriously difficult to diagnose. Without radiographic and laboratory facilities its diagnosis is often little more than guesswork. The early recognition of tuberculosis in childhood is the subject of a report by a subcommittee of the British Paediatric Association which has been circulated to interested persons and institutions and deserves a wider publicity. This report recommends a series of far-reaching measures to remedy what is at present a serious defect in our public health system. The first need is the examination of all child contacts down to infancy of known cases of pulmonary tuberculosis, and, conversely, a search among adult contacts for the source of infection when a child develops the disease—this in order to prevent the infection of further children. There should be some mechanism whereby children suffering from erythema nodosum or phlyctenular conjunctivitis can be brought to the notice of the tuberculosis officer. Special clinics are required for the examination of children, not only equipped with all necessary diagnostic facilities but staffed by those with paediatric experience. Finally, there is a serious lack of facilities for institutional treatment: children should not in general be sent to adult sanatoria. These are the main points in a document which forms a serious indictment. The effect on children of the present increase in adult pulmonary tuberculosis is one of the worst features of the situation as we see it now, and such steps as may now be possible for dealing with it deserve earnest attention.

THE ERGOT ALKALOIDS AND INVOLUTION OF THE UTERUS

The discovery and isolation of a new alkaloid of ergot—ergometrine—were foreshadowed by Chassar Moir in these columns in 1932[1] and described in detail by H. W. Dudley and Chassar Moir in 1935.[2] Since then the rapid and strong oxytocic action of ergometrine has been amply confirmed by its widespread clinical application. Equal in speed and efficiency to extracts of posterior pituitary for the control of post-partum atony and haemorrhage, it possesses advantages over such extracts in that it is non-toxic and has no effect on the vascular or autonomic nervous systems. These advantages are not yet appreciated by all who practise obstetrics, and cases of "pituitrin shock," often mistaken for "obstetric shock," still occur. The introduction of this ergot alkaloid (also isolated and described by independent workers in Switzerland and the U.S.A. in 1935) was unfortunately clouded by a controversy over nomenclature, and it has been variously called "ergobasin," "ergotocin," "ergotrate," "ergostetrine," "ergoclinine," and "ergonovine." So far as this country is con-

[12] *Lancet*, 1942, **2**, 750.
[13] *British Medical Journal*, 1942, **2**, 436.
[14] Ibid., p. 417.

[1] *British Medical Journal*, 1932, **1**, 1119.
[2] Ibid., 1935, **1**, 520.

cerned, however, confusion has to a large extent been avoided by the ready and wide acceptance of the term "ergometrine," first suggested by its discoverers.

In a recent paper[3] Chassar Moir and Scott Russell discuss the use of ergometrine and ergotamine during the puerperium. In a large series of cases the rate of involution of the uterus was assessed by careful observation of the height of the fundus and of the amount and character of the lochia. Their findings, in contrast with the results of similar if less carefully controlled investigations by other workers, go to show that neither of these ergot alkaloids is beneficial to the process of involution. Study of the problem is hampered by incomplete knowledge of the physiology of involution. The oldest view—that the muscle undergoes fatty degeneration and a large proportion of the fibres disappear—is no longer accepted. The process is one of atrophy, and is said to represent the most rapid type of atrophy known to occur in any tissue under either physiological or pathological conditions. The muscle fibres are reduced in size with loss of cytoplasm, but it is doubtful whether they are to any extent reduced in number. If this is the result of ischaemia brought about by the contraction and retraction of the uterine muscle fibres, then ergot should assist involution. But if the hypertrophy of the uterus during pregnancy is the result of the presence of large amounts of oestrogen in circulation and the mechanical stimulus of the products of conception, then it is reasonable to assume that the puerperal atrophy is the result of the withdrawal of such factors. In such a case ergot, by increasing the rate and amplitude of contractions to the extent of inducing spasm, could not assist involution, but might well have an adverse effect by hindering the absorption of the products of autolysis. The scientific basis of the traditional ergot therapy in the puerperium is certainly open to question, and the latest clinical observations indicate that it does not facilitate involution.

Ergot alkaloids are often advised in the treatment of uterine puerperal infection, but, again, Chassar Moir and Scott Russell record no decrease in the morbidity rate in patients given ergometrine and ergotamine. They argue, moreover, that, as infection elsewhere in the body is treated by resting the infected tissue, it is unreasonable to induce activity in a uterus that is infected. There is, however, a place for ergometrine in the treatment of those cases, not necessarily infected, in which the lochial discharge is partly retained in the uterus. In these days, when the supply of ergot and its alkaloids is limited and should be conserved, those clinicians who still prescribe them as a routine in the puerperium would do well to reconsider whether they should continue a practice which, if not harmful, is of doubtful value and is certainly wasteful.

CLINICAL BIOTIN DEFICIENCY

Biotin (formerly known as vitamin H and coenzyme R) is the latest vitamin to be synthesized. This was done last May by Harris and his colleagues in America,[4] confirming the formula assigned to the vitamin last year by du Vigneaud and his collaborators, who concluded that it was a carboxylic acid with a nitrogen-substituted cyclic urea grouping and sulphur in a thio-ether linkage.[5 6] The existence in raw egg-white of avidin—a protein which forms a complex with biotin—has been known for some time. Oral administration of large amounts of dried egg-white to rats produces a deficiency syndrome characterized by an exfoliative dermatitis, hyperkeratosis, alopecia, loss of weight, and spasticity. This condition, known as egg-white injury, is due to the avidin forming a complex with the biotin of the diet and preventing its absorption. We referred in these columns last year[7] to the work of Sydenstricker and his colleagues,[8 9] who claim to have induced biotin deficiency in human beings by the administration of large quantities of raw or dried egg-white. The subjects of the test suffered from a scaly dermatitis, ashen-grey pallor, tongue lesions, paraesthesiae, nausea, and changes in the blood picture. The experiment afforded clear evidence that biotin is an essential food factor for man. In this connexion Williams's study of an old retired Italian labourer who had suffered from an exfoliative dermatitis and mild conjunctivitis for several years is of interest.[10] There was no history of medication or exposure to chemicals to account for the rash, but the dietary history was significant. Since adolescence the patient had been extremely fond of raw eggs, and in order to get enough he had deserted his family so that he could run a chicken farm. His consumption of raw eggs ran into six dozen a week. He was not to be expected to eat regular meals on top of this, but what was unexpected was the fact that he drank one to four quarts of wine daily. His choice of foods was narrow and excluded good sources of biotin (milk, meat, liver). The skin lesion, which was also studied by biopsy, did not correspond to that due to deficiency of nicotinic acid, riboflavin, pantothenic acid, or pyridoxine (vitamin B_6), but closely resembled that seen in animals deficient in biotin. Before treatment the serum biotin was low. After the patient had been in hospital for a fortnight, during which time he received a liberal hospital diet and injections of the methyl ester of biotin, the dermatitis largely disappeared and the serum biotin returned to normal. This would appear to be the first recorded case of clinical biotin deficiency: Sydenstricker's patients were volunteers on an experimental diet. Biotin deficiency as a result of the action of avidin is unlikely in egg-depleted England. In any case the avidin binds biotin only when the eggs are eaten raw or dried and uncooked, and even then they would have to be taken for a long time. Williams's patient ate large quantities of raw eggs for years before deficiency symptoms appeared. It is not surprising, therefore, that Rhoads and Abels[11] could not induce a biotin deficiency in patients suffering from cancer—tumour tissue is rich in biotin, which is possibly essential for its growth—by feeding 375 g. of raw egg-white and 165 g. of dried egg-white daily for thirty weeks.

Kögl and Tönnis,[12] who first isolated biotin, obtained only a milligramme from a ton of dried egg-yolk. Now that it has been synthesized it should be available in quantities which will permit further investigation of its function in human nutrition.

VITAMIN C AND COOKING

Thanks to propaganda on the part of the Ministry of Food the nation has begun to worry about its vitamin C, and so imbued has it become with notions about rates of destruction and such-like that all sense of proportion is being lost. There is a popular idea nowadays, for instance, that if vegetables are left over from dinner it is useless to keep them and reheat them, for they will have lost all their nourishment; that they might just as well be thrown away. This idea is erroneous. The reheated vegetables will provide as many calories as when they were freshly cooked

[3] *J. Obstet. Gynaec. Brit. Emp.*, 1943, **50**, 94.
[4] *Science*, 1943, **97**, 447.
[5] *J. biol. Chem.*, 1942, **146**, 475, 487.
[6] *Science*, 1942, **96**, 455.
[7] *British Medical Journal*, 1942, **2**, 548.
[8] *Science*, 1942, **95**, 176.
[9] *J. Amer. med. Ass.*, 1942, **118**, 1199.
[10] *New Engl. J. Med.*, 1943, **228**, 247.
[11] *J. Amer. med. Ass.*, 1943, **121**, 1261.
[12] *Z. physiol. Chem.*, 1936, **242**, 43.

(more if they are fried in a little fat), and they will contain just as much protein and minerals. "Save food" is the first rule in wartime cooking, and it is foolish to throw away good food just because it may have lost some of its ascorbic acid. This vitamin, however, has quite rightly been given special attention, because it is the dietary essential most likely to be deficient in wartime diets. Miss M. Olliver[1] has recently published the results of her extensive investigations into the vitamin C in fruits and vegetables, and the effects of storing and cooking them in different ways. Of common home-grown fruits, black-currants and strawberries contain more vitamin C than oranges or lemons. Other bush fruits with edible pips such as gooseberries, loganberries, raspberries, blackberries, and also tomatoes are moderately good sources (20 to 40 mg. per 100 g.), while apples, pears, and stone fruits such as plums and cherries contain very little (less than 10 mg. per 100 g.). When any of these fruits are stewed ascorbic acid is extracted into the juice, but as this is generally eaten there is little or no less of the vitamin, or indeed of any of the constituents—only a dilution with the cooking water. Jams made from these fruits also retain all the vitamin C of the original fruit, but it is diluted with sugar and water. Blackcurrant jam is a better source of vitamin C than raw lemons or grapefruit; plum jam contains practically none.

Storage has a bad effect on vitamin C. Green leafy vegetables and peas in the pod, which when freshly gathered are an excellent source, lose about 10% of their ascorbic acid every day they are stored after harvesting. Root vegetables do not lose vitamin C so rapidly, but losses on storage cannot be ignored, because roots are often eaten many months after they are lifted. Potatoes, for example, contain 16 mg. ascorbic acid per 100 g. when they are freshly dug in August and September. By March they contain only 2 mg. per 100 g.

When vegetables are boiled the soluble constituents diffuse out into the cooking water, which the English cook or housewife generally throws away, and the more soluble the constituent the more will be dissolved out in this way. The extent of the loss also depends upon the volume of the cooking water and the time of cooking, but more still upon the surface area of the pieces of vegetables in relation to their size. Green leafy vegetables with a large surface area may lose 80 to 90% of their soluble constituents, whole potatoes only about 20%. The addition of salt and soda to the cooking water seems to make no appreciable difference to the loss. So far as the minerals are concerned, these losses are of little importance. The soluble elements, Na, K, and Cl, are always plentiful in ordinary diets. Ca and Fe, which are more likely to be deficient, are relatively insoluble, and conservative methods of cooking are unlikely[2] to increase the daily intake by more than about 3%. Vitamin C, however, is soluble and it is scarce, and vegetables are now our chief source during most of the year. Every effort, therefore, should be made to preserve it. Two years ago a note was drawn up by the Accessory Food Factors Committee of the M.R.C.[3] suggesting how this should be done, and the chief points were these. Obtain vegetables as fresh as possible and keep in a cool damp place. Use the smallest possible amount of water for cooking, and have it boiling before adding the vegetables. Cook vegetables no longer than is necessary to make them tender, and serve them directly they are cooked. Use the cooking water for soups and gravies. But—even if these rules have been broken—the vegetables should not be thrown away.

[1] *Chem. and Ind.*, 1943, **62**, 146.
[2] McCance, R. A., Widdowson, E. M., and Shackleton, L. R. B., *Spec. Rep. Ser. Med. Res. Cncl.*, 1936, No. 213.
[3] *British Medical Journal*, 1941, **2**, 26.

CLEANING MILK BOTTLES

Among the precautions necessary to ensure a safe milk supply the condition of the bottles into which it is filled must clearly be taken into account. Contaminated bottles have in fact been known to cause outbreaks of enteric fever, though this mode of infection is much less common than contamination of the milk itself before bottling. It is generally agreed that the single-service carton is the ideal container for milk, but its widespread adoption is not only quite impracticable now but unlikely for many years, since much capital in the dairying industry is sunk in bottling plants. A study of methods now in use for cleaning and sterilizing milk bottles was carried out during 1937-9 at the request of the Ministry of Health by Betty C. Hobbs and G. S. Wilson, and a condensed version of their report,[1] which is itself a formidable document containing much valuable information, has now been published. Their first task was to devise a method for determining the bacterial content of washed milk bottles, and the method chosen from among several studied is likely to be generally adopted: it consists in rinsing the bottle with sterile fluid, of which aliquot portions are plated for bacterial counts. The standard suggested is a count of not more than 600 colonies per pint bottle, or approximately 1 per c.cm. capacity. This method was used for the examination of bottles from 105 bottle-washing plants in Greater London, which were of 26 different types. Generally speaking, the lowest counts were given by bottles from large plants employing detergents, the straight-through being better than the rotary type, and spraying being better than soaking in the detergent. Steam sterilization gave less satisfactory results, and hand-washing much the highest counts of all. It seems clear that combined cleaning and disinfection by detergents such as caustic soda, the disinfectant action of which has recently been exhaustively studied by these authors,[2] is preferable to steam sterilization. Bottles so treated are at that stage sterile or nearly so, yet the final product may be heavily contaminated; and, indeed, the large majority of those examined did not conform to the standard proposed. This was found to be due to re-circulated water used for rinsing, this water being itself so heavily contaminated that bacterial growth evidently proceeded in it. This difficulty can be overcome by using hot water, but the objection to this is that the bottles need to be cooled before filling. An alternative is the use of chlorinated rinse water, but this method demands accurate control such as it is not likely always to receive, and the authors accordingly do not recommend it. Their remedy, which deserves serious consideration in the future design of bottle-washing plants, is to follow rinsing with hot water by external washing only with recirculated cooling water and a final rinse, both external and internal, with a cold spray direct from the main. Apart from the actual danger of using imperfectly sterilized bottles, which may stultify all efforts to improve the bacterial quality of the milk itself, this question must have an important bearing on keeping quality. It is thus a subsidiary aspect of the milk problem which deserves more attention than it has so far received. The need for cooling bottles before filling would of course be removed were the milk to be pasteurized in bottle, a system which in theory at least has much to be said for it. The possibility of recontamination after pasteurization is not only a frequently advanced objection to reliance on this process but a practical difficulty inherent in any system which involves the further manipulation and transfer of a sterilized product.

[1] *J. Hyg.*, Camb., 1943, **43**, 96.
[2] Ibid., 1942, **42**, 436.

CHILD CARE IN A NATIONAL HEALTH SERVICE*

BY

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It is difficult to say precisely when the child welfare movement began, but we do know that it initiated with voluntary agencies. At the outset I should pay my tribute to the pioneer work for the care of children which has been carried on by the component bodies of the National Council for Maternity and Child Welfare. Many societies over a period of years have interested themselves in and developed some particular phase of child care. These agencies for a time worked in isolation, but the need for co-ordination of their activities became apparent and resulted in the establishment of the National Council, under whose auspices we meet to-day. If the pioneer work of these voluntary bodies did nothing else it stirred the public at the end of last century to a realization of two facts—that the birth rate was falling, and that the infantile mortality rate remained at a high level. Thought begat action, with the result that since the beginning of the present century progressive provision has been made for infant care, and there now exists throughout the country a vast network of child welfare centres and other and allied provision, both municipal and voluntary, for the care and nurture of the child.

All this provision has been made with the view of securing the health of the child, and great good work has been achieved—notably a fall in the infantile mortality rate in 1942 to 49, as compared with 151 in 1901. Whether it is as the result of this splendid achievement or otherwise, the people generally are demanding health not only for the child but also for themselves, and it is my privilege to put before you the essential elements of a national health service and child care within it.

Concept of a National Health Service

Primarily a national health service must be based on the conception of the maintenance of the health of every individual from the cradle to the grave, and the measure of disease within such a service must be regarded as the measure of its failure. Health includes not only bodily health but mental health. Health is dependent on many circumstances. How can you expect to rear a healthy race if fathers or mothers are themselves suffering from transmissible diseases? Can the health of any family be A1 where there is not sufficient food or clothing? Is it to be expected that people can be at the top of their form if they are living under insanitary conditions in damp and overcrowded houses? Is the smoky atmosphere of our towns conducive to healthy lungs and a bright and cheerful outlook on life? Can we separate good health from good environmental conditions—from the conditions under which we live at home, from the conditions under which we work at the office or in the factory, or the child in the school or the nursery?

The doctor in a national health service must be a real family doctor who will know and appreciate all the various factors bearing on the health of the family or any individual member of it. He not only must be able to detect and cure disease but must realize the importance of the hereditary influences, environmental conditions, and social circumstances affecting health. The doctor must indeed be, more than ever before, the counsellor and friend of the people and assume responsibility for the achievement of health, which is the primary aim of a national health service.

A comprehensive health service has many components. It includes a medical service—consisting of general practitioners, public health practitioners, consultants, and specialists, working at and from well-equipped health centres and hospitals, visiting the people in their homes, and looking after their health and welfare in the factories and their work-places. Such a service further includes the provision of the necessary auxiliary services—e.g., health visiting, nursing, midwifery, sanitary, and ambulance services. A dental service is also a necessity. It will be appreciated that a service of this character is vast and complex and, in the opinion of many well qualified to judge, requires a Minister of Cabinet rank as its administrative head, with a central department dealing only with matters that have a bearing on health. Locally such a service must be conducted in an area of suitable size under a unified control. Providing these desiderata are secured, it seems to me that a national health service will rapidly make harmonious progress towards better health. All health work will be co-ordinated, and the best means of attacking health problems will be devised after full consultation with all concerned.

I want to see the health, medical, and ancillary services appropriately co-ordinated in an area of adequate resources. Particularly I want to see in operation a scheme whereby every general medical practitioner, every public health medical practitioner, every specialist, and every consultant throughout the whole of the country will be constantly thinking about health and working together as one gigantic team for the health of the community. I am satisfied that the health of the community as a whole will then soon show an improvement as spectacular as that achieved for the child by the child welfare movement.

A Child's Charter

With the establishment, however, of a national health service we do not want any lag in the improvement of child health, and it would appear to be necessary to state what provisions should be made for child care in such a service. Here is the Child's Charter I would formulate. It contains 12 Articles of Faith.

1. The child must be well born and free from inherited disease.
2. The child must be assured of a good environment and a happy home.
3. There must be adequate children's allowances.
4. The pregnant woman must be fully cared for medically and socially, so that the child is born well and strong.
5. Home helps and convalescent homes should be available before, during, or after confinement as necessary.
6. The mother must be enabled to devote herself to her child for a period of three years after birth.
7. The child must receive an adequate diet.
8. The child must be under regular medical supervision.
9. Nurseries should be provided in which mothers may leave their children under 3 years for, say, 3 or 4 hours at a time, while they do their housework or shopping or have rest.
10. Nursery schools should be available for children over 3 years.
11. Hostels should be provided for children whose mothers are in hospital for confinement or illness.
12. Approved foster mothers should be available for approved cases.

In connexion with child care it should always be borne in mind that the natural agencies for the care and upbringing of a child are the family and the home, and that generally they are the best and that everything should be done to preserve these links. It may be, however, that this is not possible in some cases and that a foster mother has to be substituted. If this is so, then certain conditions should be required: (*a*) The decision to foster out a child should not be left entirely to the parent or guardian as at present. It should be necessary for the consent of the welfare authority to be obtained. (*b*) Applications for placing children with foster mothers should be made by the mothers to the welfare authority, and the mothers should be required to keep in touch with the welfare authority. (*c*) It is essential that foster mothers should be assured of regular and sufficient payment for the proper care of the child; to this end the payments to foster mothers should be made directly by the welfare authority to the foster mothers. (*d*) Foster mothers should be licensed by the welfare authority after a probationary period of, say, 1 year. (*e*) The child-protection visitors of the welfare authority should keep foster mothers under supervision and see that a reasonable standard of living is maintained; if foster mothers are paid by the welfare authority a proper standard can be required.

These are my 12 Articles for progressive improvement in child care and health. They include medical elements, but are by no means wholly medical. I cannot insist on this too strongly, because there are many who believe that a hospital policy is a health policy. It is the duty of the doctor to

* An address given to the National Conference on Maternity and Child Welfare, London, on July 9, 1943. (Abridged for publication.)

postpone the event of death at any age. Recent discoveries and hospital provision enable considerable patching to be done, with resulting prolongation of life. But while such work is laudable and necessary it can never be the essential basis of health. We do not want patching. We do not want to be crippled and obtain spasmodic relief for longer or shorter intervals after a period of treatment. We want health. We want and earnestly desire that the child shall be well born and shall remain well. We want the well child to become the healthy adult. We do not want the child to whom we have given so much care to develop into a hospital-visiting adult. We desire that all members of the community shall have the same consideration for the maintenance and improvement of their health as has been given to the infant with such conspicuous success. If the national health service in the making lays down health as its aim, and makes provision so that the aim can be reached easily and simply under a single direction regardless of self-interest or vested interests, then I feel sure that rapid progress towards national health will be made.

A NOTE ON SURGERY IN THE EIGHTH ARMY

The note published below was written by a surgeon in the 8th Army in the closing stages of the Tunisian campaign. It was written on a letter-card to a colleague at home who, about to go into the Army as a surgeon, wanted to have first-hand information on war surgery at the Front. We have not tampered with the author's idiom.

1. *Débridement.*—All my eye! Means excision of far too much. Skin edges rarely need excision. Dead tissue only is removed, and the wound, including deep fascia if necessary, opened up enough to allow adequate drainage and to relieve tension if present. This we call "wound trimming." Clean through-and-through wounds with a bullet, unless tension be present, are left alone except for sulphonamide dusting, which is done in all. Then lay a vaseline gauze dressing on; don't make it into a plug!

2. *Amputations.*—There are no sites of election in war surgery. You save all you can, as there is invariable sepsis in forward areas, and this means subsequent loss. So it usually has to be done again, to suit the instrument maker, many months later. A thin layer of sulphanilamide vaseline gauze is put over the muscle and some of the stump, and then the flaps approximated with not more than 3 stitches. The results are excellent. Don't worry about types of flaps: save all you can.

3. *Plaster-of-Paris.*—Always split if being evacuated within a week (I speak of fresh cases), and also for evacuation a lightly padded plaster is better than an unpadded. Evacuation, especially on our long lines of communication, knocks hades out of patients in all sorts of ways. Limb swelling is one of them.

4. *Fractures.*—Use your common sense. The way a fractured femur gets to the base (apart from initial treatment—see excellent description in R.A.M.C. manual of training) is in what is called a Tobruk plaster. Skin extension, plaster-of-Paris round the leg and split, Thomas splint on *top* of this, with pads of wool between the leg and the irons at the knee level to steady it, fix the extension to the end of the Thomas. Then two cuffs of plaster-of-Paris, right round splint and everything, in mid-thigh and mid-leg, either padding or splitting the cuff, again to prevent circulatory disasters.

The fractured humerus is more difficult to immobilize for a long journey. Generally it is done by a thoraco-brachial plaster. This explains itself. One big point is to keep the tip of the elbow forward from rubbing on the crest of the ilium.

Any fracture of os calcis or astragalus is followed by immense swelling of the foot. Pad the plaster very well. Indeed, only put the plaster on to keep the padding on!

5. *Chest Wounds.*—Haemothorax. Leave alone as regards aspiration unless the patient is dyspnoeic at rest. They travel comfortably (on sulphonamides) and can be aspirated under the best circumstances at the base.

Sucking wounds. Don't sew up but stop the sucking with a sulphonamide vaseline gauze pad kept well in position with strapping or even stitches.

Conservatism is the keynote in chests.

6. *Abdomens.*—Nothing has made such an advance, at least as regards *early* saving of lives. Sew the tears in small bowel; exteriorize ones in the large. Get a Ryle's tube down and keep suction going with a blood transfusion apparatus (with water) to do the work. Then saline glucose, intravenous. Both of these for 4-5 days. And gr. 1/6 or 1/4 of morphine 4-hourly. Never despair of an abdomen.

7. *Heads.*—Shave, dust sulphanilamide, and leave the head units, with the diathermy and sucker, to do the rest.

The handy book I carry is *Treves's Student's Handbook of Surgical Operations.* For the things that worry—anatomical points like ligating the posterior tibial, etc.—are all there!

There, dear boy, forward surgery in a nutshell—and for nothing—by one who *should* know. But I'll write again soon with real news. This is just so as you won't worry if you are called up. If you are, come this way.

SUPPLIES AND DISTRIBUTION OF PENICILLIN

Statement by Medical Research Council

It is now generally known in the profession, and even to some extent among the laity, that penicillin has remarkable therapeutic properties, and frequent inquiries are made about its availability. The following is a statement of the present position. In order to extend and amplify the pioneer work of Prof. Fleming, and of Prof. Florey and his colleagues at Oxford, the Medical Research Council, at the request of the Ministry of Supply, last March appointed a Committee on Clinical Trials of Penicillin, which controls the distribution of penicillin for purposes of clinical research, and is instructed to employ the present limited supplies to gain new knowledge of the curative possibilities of the drug rather than merely to repeat the therapeutic successes of which it is already known to be capable. In addition to a quantity allocated to the War Office for trial in wounds in the Army over-seas, supplies of penicillin for research into the systemic treatment of selected infections have been allocated to four centres in this country; four others are receiving, or are about to receive, smaller supplies for the study of local treatment only. It has not seemed advisable at present that these centres should be made generally known, nor that an invitation should be issued to refer suitable cases to them, because the numbers of patients which can be dealt with are so limited that this could only cause widespread disappointment.

The policy of the therapeutic trials now proceeding is to treat conditions known to be susceptible only so far as is necessary to define the minimum effective dosage, the best methods of administration, and any factors not yet studied on which success may depend, and to explore the possibilities of penicillin treatment in conditions hitherto unstudied from this point of view. Penicillin is known to have an action on many species of bacteria, some of which cause a great variety of lesions: these, together with the many forms which an infected wound may take, afford a wide field of study.

Even with the fullest co-operation of the Ministry of Supply and of the manufacturing firms, the difficulties in making penicillin on a commercial scale are still so formidable that the present output in this country is scarcely sufficient for the work in the four main research centres, and is only a minute fraction of the quantity which would be required if all cases of even a few specified infections were to be afforded treatment. Production on a greatly increased scale is being urgently undertaken both here and in the United States, but in both countries the requirements of the fighting Services are likely to absorb most of the output for some time to come, and to name a date when adequate supplies will be available for general use is at present impossible. For the reasons given above it will be appreciated that requests for supplies of penicillin for the treatment of individual patients cannot, under existing conditions, be met.

F. S. Daft and co-workers (*Publ. Hlth. Rep.*, Wash., 1942, **57**, 217) report the occurrence of extensive hyaline sclerosis and calcification of blood vessels in young rats given a diet containing 1% sulphaguanidine for from 62 to 192 days. The changes so far have been observed in the small arteries of the heart, lungs, kidney, pancreas, and the intestinal submucosa.

SPEECH THERAPY

The Association of Speech Therapists, formerly the Remedial Section of the Association of Teachers of Speech and Drama, held a conference at B.M.A. House, London, during the first week of August. The organization of speech clinics and their relation to medical, educational, and social services and the allied professions were a principal subject of discussion. An entertaining demonstration of animal language, including gramophone records of such usually dumb beasts as the Bactrian camel, was given by Dr. Ludwig Koch, who has been working at the subject with Dr. Julian Huxley. There were also two lectures by medical men. In one of these Dr. Helen Watson spoke on the value of complete relaxation as a means of overcoming many nervous and other troubles, and in the other Dr. C. Worster-Drought developed the interesting subject of congenital auditory imperception and its relation to speech defects.

Auditory Imperception

Children who suffer from auditory imperception, although able to hear sound, fail to appreciate the significance of spoken words and to store their memories with words heard. On a casual observation they may appear to be deaf, and only by special tests can their cases be differentiated from ordinary types of deafness. Some of the children are mute; others have a language of their own, unintelligible to the stranger though understood by their parents. Dr. Worster-Drought emphasized the need for a careful and detailed examination of hearing before a definite conclusion is reached in a suspected case. If the condition is regarded at once as auditory imperception it may mean that real deafness in varying degrees is neglected. Tests which depend upon the subject's repeating what he hears should not be employed; these people can often repeat the sounds they hear: the trouble is that they do not understand them. Only tests which require that the subject shall understand the meaning of the sound can be accepted. Sometimes even the ability to repeat sounds is defective; the number of syllables may be caught correctly but not the actual sound. The recognition of musical sounds varies considerably in cases of this kind; some of the subjects cannot recognize discords made by themselves on the piano. The speech of the individual suffering from auditory imperception is rarely spontaneous; it is monotonous and lacks stress and intonation: often it is a series of unrelated sounds without grammatical structure. Yet, as a rule, the mental condition of these children is normal if they have been brought up in a good environment and treated with sympathetic understanding by parents and teachers; on the other hand, if neglected they may appear imbecile from deprivation. Cases are on record in which speech has not been acquired before the age of 12. Such children may find their way into schools for the deaf, and when, sooner or later, it is discovered that they can hear they are put down as lazy and inattentive.

For a long time, said Dr. Worster-Drought, this speech defect was considered to be an independent condition; its relation to the auditory mechanism was not understood. In its severe form it is rare, but minor degrees are common. It seems to appear much more often in boys than in girls, and there is a familial factor but no evidence to show how it is transmitted. The cause, whether birth trauma or some biological variation of the nature of aphasia, can only be a matter of speculation. Treatment depends on the early recognition of the defect, and the general aim must be the "socialization" of the individual and the planning of his education so as to secure for him a normal relationship with his fellows and qualify him for occupation. Training of the articulation by sound and touch and the teaching of lip-reading in the same way as with deaf-mutes may be applied, but teaching in classes for the deaf is to be avoided.

J. Singh (*Ind. med. Gaz.*, 1942, **77**, 733) records a case of diphtheria of the glans penis in a boy aged 5 years, shown by an ulcer extending from the corona to the external urinary meatus. There was no lesion in the throat. Organisms morphologically resembling diphtheria bacilli were grown from the lesion. Recovery rapidly followed administration of diphtheria antitoxin.

Nova et Vetera

THE BICENTENARY OF THE BIRTH OF LAVOISIER

Antoine Laurent Lavoisier was born in Paris on August 26, 1743. The son of a rich advocate, he studied anatomy in addition to chemistry and the other sciences. While still very young he joined the famous Guettard in a mineralogical tour, and at the age of 25 he entered the *Académie*. Almost at the same time he became a member of the *Ferme*, the body of private financiers who purchased the right of collecting the national taxes. Thus began a very active administrative and business career. In 1771 he married Marie Anne Pierrette Paulze, a girl of 14, who developed into a brilliant woman. A few years later Lavoisier was appointed an inspector of gunpowder for the Government, and till 1792 he and his wife resided at the Arsenal. His guidance enabled France to maintain the large stocks of powder necessary for the revolutionary wars. But Lavoisier had other interests, including politics. He did much work for the Academy, and he served on various committees dealing among other matters with agriculture and with weights and measures—the foundation of the metric system. He was in constant touch with all the brilliant men of his age. In 1791 he was appointed Secretary to the Treasury. But as a former Farmer-General he had to suffer under the suspicions—later shown to be unfounded—which fell upon the directors of the *Ferme*. An inquiry was instituted. The evidence was weighted heavily against the Farmers-General, and in November, 1793, they were arrested. After long confinement they received the farce of a trial on May 8, 1794. They were condemned to the guillotine, and the sentence was carried out forthwith. The bodies of Lavoisier and of the twenty-seven other victims were thrown into nameless graves.

Busy though he was with other matters, Lavoisier devoted six hours daily to scientific work. Although he was responsible for investigations into the purification of water, the lighting of cities, and on geological and meteorological subjects, his fame rests on his brilliant chemical synthesis. He has no claim to be regarded as the "discoverer" of oxygen. The active principle of the air had been suspected by Lower, and more especially by Mayow in 1674, but the significance of Mayow's "spiritus nitro-aereus" had long been forgotten—swamped in the subsequent development of the phlogiston theory. The gas was prepared by Scheele in 1772 and independently by Priestley in 1774. Priestley named it "dephlogisticated air," and he measured roughly its superiority to ordinary air. Priestley also recognized that it could be used to increase the force of a fire, and he suggested its use in medicine. But it was left to Lavoisier to demonstrate the vital importance of this newly recognized gas in combustion, in respiration, and in the formation of acids. The name "oxygen"—i.e., acid-producer—is due to him, and he must be credited with the first clear conception of the significance of the gas.

Mayow a century before had postulated that his "spiritus nitro-aereus" is necessary for life, and he showed that an animal in a closed vessel dies more quickly if a lighted candle is also introduced. He suspected that the vital particles of the "spiritus" unite with food particles in the muscles. This work was forgotten, and it was Lavoisier, alone and with Laplace, who established an equation between the quantity of heat formed in animal metabolism and that in ordinary combustion. He showed that animal heat results from oxidation—in the lungs, as he thought—and with Séguin he measured the oxygen consumed and the carbon dioxide and water produced in respiration. He was thus the founder of exact investigations on metabolism, and his wife's sketches show him in his laboratory using an apparatus which must have been one of the earliest attempts at quantitative calorimetry.

As a constructive thinker on chemical matters Lavoisier was very great. He virtually destroyed the phlogiston theory; he enunciated the law of indestructibility of matter, and he was largely responsible for the introduction of the chemical nomenclature which we use to-day. His *Traité Elémentaire de Chimie*, published in 1789, made chemistry a unified science. It was to chemistry what Newton's *Principia* was to the physical

sciences. On the day after Lavoisier's death Lagrange said: *"Il ne leur a fallu qu'un moment pour faire tomber cette tête, et cent années peut-être ne suffiront pour en reproduire une semblable."*

E. A. UNDERWOOD.

RUSSIAN SURGEONS AND RUSSIAN SURGERY

BY

R. WATSON-JONES, F.R.C.S.

Mr. Watson-Jones was one of a group of British surgeons who recently visited the U.S.S.R. under the auspices of the Medical Research Council and the British Council, and has contributed the following article at our request.—ED., *B.M.J.*

It is not easy to form an immediate impression of the people of Moscow because the closing of all shops except the few which supply food, the lack of colour, lighting, decorating, and flowers, the striking disappearance of dogs, cats, and pets, so that I saw but one dog in three weeks, the wearing of shoddy clothes and footwear so that the Army might be well clad, and the limitation of amusement to an occasional seat at the ballet are the restrictions of war, and they emphasize unduly the solid, determined, plodding, almost expressionless features of men and women in the streets. Life in Russia has been hard; pleasures have been few. It is true that there is no sign of malnutrition; the rations of the worker are comparable with those in England; I searched for evidence of rickets and found none; the children are bright-eyed, healthy, and happy. But there have been privations, and the faces of the people show it; it is not always easy to know what they are thinking. Nevertheless one impression was quickly formed by the surgeons who represented England, Canada, and the United States in a recent visit to the Soviet Union. It was impossible to mistake the spirit of overwhelming hospitality with which we were received. It was impossible to misjudge the very cordial friendship which developed. From high officials of the Commissariat who received us at the airfield, to hotel staff members who apologized because they could offer no more than one hot bath a week; from generals who thought of our comfort during arduous journeys over shelled roads and demolished bridges, to soldiers from Stalingrad who insisted on our climbing and entering the mightiest tanks; from hospital superintendents and commanding officers whose invitation to a cup of tea implied a heavily laden table and a two-hour banquet, to attendants in the Park of Rest and Culture who were satisfied only when we shared the terrors of a dummy aircraft which simultaneously rolled and looped; from crowds at the Exhibition of Captured War Material whose smiling comments included the words "Angleeskee" and "Americanskee," to the handful of determined survivors remaining from the half-million inhabitants of demolished Vyasma; from all people and all professions we received the greatest kindness and the most convincing evidence of friendship and good will.

We formed a second, very vivid impression on seeing the astonishing capacity of Russian women for hard work. Men employed in repairing roads and relaying tram tracks worked with an intensity which reminded us of home; but the women who shared their strenuous task paused less often and were more consistent. Girls of 18 and 19 drive the trams and scramble on to the roofs to repair the trolley arm. Traffic is controlled by sturdy women police armed with a black-and-white striped truncheon and a pistol at the hip. Hundreds of miles of military roads are guarded by women soldiers with tommy guns. Women doctors, women surgeons, and nurses work in the front line; many of them wear the chevrons of multiple wounds. The Inspector-General of Medical Services of the Red Army is a woman.

Front-line Hospitals

Not only do nurses attend the wounded, but in the intervals of battle they build the hospitals. One of the front-line hospitals we visited is built in territory which until last March was occupied by the enemy; within four months a 2,000-bed hospital has been almost completed by nurses who are obviously skilled in the use of the saw, the plane, and the spirit level. Many of these hospitals are buried six feet deep and covered with a thin layer of soil and turf. They are constructed wholly of wood from the forests in which they are perfectly camouflaged. Trees standing within an inch or two of the walls are left undisturbed, and wards may even be built round living trees which grow out of the roof, only branches within the building being stripped.

The reception-sorting ward is completely free of all fixtures and equipped only with collapsible trestles on which stretchers are laid. Washing and shaving is recognized as an important first-aid measure, and part of the ward is devoted to baths, or rather to positions near the wall where hot water is sprayed over the wounded man as he lies on the stretcher. After the patient has been examined he is marked with a coloured label—red for urgent surgery, blue for redressing, white for evacuation, each numbered 1, 2, or 3 in accordance with priority, and sent to one of the special wards—orthopaedic, neurosurgical, thoraco-abdominal, lightly wounded, etc. Each ward is equipped with its own *x*-ray, wound-dressing, and operating suite, and treatment by skilled specialists is instituted within 10 or 20 miles of the front line and within 24 to 48 hours of wounding. The provision of every ward with theatre and *x*-ray equipment may seem wasteful and extravagant; but it is to be recognized that each is a 200-bed ward, the equivalent of a small hospital which empties and refills every third or fourth day as patients are evacuated to the rear, and such a flow of casualties is more than enough to saturate one set of theatre and *x*-ray equipment. This concentration of 200 wounded to a single ward is possible because patients are nursed on stretchers in tiers of two or even three, laid on rods which are suspended from the upright supporting posts of the roof. The rods are easily turned back so that in periods of less intense activity only the middle bunks, or the middle and lower bunks, need be used, and sometimes the whole space may be cleared.

Such emergency hospital construction, with its emphasis on *x*-ray, plaster room, and operating theatre facilities rather than on ward design, was most impressive, particularly having regard to the speed of building which it permits, the conservation of space, the adaptability to a varying flow of casualties, the economy of transport of patients before and after operation, and the segregation and specialization which are possible almost at the line of battle. The principle of segregation is carried beyond the specialist wards of sorting-evacuating hospitals to specialist hospitals further behind the line of two to four thousand beds each. So great has been the flow of casualties that it has even been practicable to devote 2,000-bed hospitals to gunshot fractures of the thigh, to penetrating wounds of the hip-joint, and to other special injuries.

Closed-plaster Technique

The closed-plaster technique is used for all major wounds, compound fractures, and joint injuries. Prof. Yudin claims that in the surgery of war this was first practised over ninety years ago by the famous Russian surgeon Pirogof.

"After the resection had been made, instead of amputation the limbs are put in plaster-of-Paris casts . . . but the main thing is that not all surgeons know how to apply a good plaster cast, the closed one . . . that is why I justified myself for applying closed and windowed plasters to every field knee wound. . . . I was surprised with the unacquaintance of the Italian and French surgeons with my method during the war of 1859. Neither the Frenchmen nor the Italians tried to apply the plaster. The worse it is for them."

Yudin teaches that after wound excision no tube or drain should be used, and no gauze pack or other "foreign body" should be inserted; an unpadded plaster cast is applied directly over the wound. I was interested to learn of this departure from the practice to which we are accustomed in this country, because I have always been impatient of discussion on the relative merits of vaseline gauze, plain gauze, and other forms of "pack." It is clear that in comparison with the principles of wound excision, immobilization, and freedom from repeated dressing, these are unimportant details of individual technique. But there is one essential difference of principle in the methods which are practised in Russia. "A large excision of all injured and all contused tissues" is recommended no matter how many

hours or days have elapsed since wounding and "independently of the presence and degree of infection." In England we believe that free excision is indicated only during the first 12 or possibly 24 hours, and that after that time wide dissection is liable to disseminate infection; we think that the correct treatment in late cases is incision and drainage rather than excision and drainage. When I submitted this contrary view Yudin maintained with all the dynamic force of which he is capable that no matter how acute and widespread the infection "simple incision and tamponade with gauze, or any kind of antiseptic, or vaseline by Winnett Orr, cannot replace the necessary excision of all damaged tissues and, still more important, the removal of foreign bodies. Such incisions are not a surgical aid, but only a primitive temporary measure in the most hopeless circumstances owing to enormous quantity of work. Such patients should be regarded as having undergone no surgical treatment at all."

Personally I am still unconvinced, but it is clear that further study is necessary. Large series of cases, comparable with Yudin's, with a similar proportion of late, "malignant septical," and desperately ill patients, must be examined. The mortality must be compared with Yudin's figures (3 to 30 days 4.1%; after 30 days 1.3%). The amputation rate must also be compared (6.5% immediate amputations for vascular damage and gangrene, and 5.5% late amputations for general septic condition).

Joint Wounds

A similar principle is adopted by many surgeons in the treatment of joint wounds; resection of the joint is preferred to arthrotomy in both early and late cases. In the hip-joint the head and neck of the femur is removed; in the knee-joint the resected bone varies from a thin sliver to a large section of the femoral condyles, but always including the joint capsule, without which drainage is considered inadequate. Sulphonamides are used and the limb is immobilized in plaster. On this subject there is some divergence of opinion, and arthrotomy of acutely infected joints has been advocated more recently in preference to resection. This coincides with our view. One of the striking features of the surgery of this war has been the excellence of function and the free mobility which are so often regained after the treatment of penetrating joint injuries by early excision of the wound (but not resection of the joint) and immobilization in plaster; we believe that resection at the height of acute infection is dangerous; and we think that excision of the head and neck of the femur leaves an unstable joint which is far less perfect in its function than a firmly ankylosed one.

Cerebral Surgery

Surgeons in this country are already familiar with Burdenko's pioneer work in neurosurgery, with Proper Graschenko's clinical investigation into gas-gangrene infection of the brain, and with Lena Stern's physiological research on the blood–brain barrier and intracisternal injection. The main principles adopted in the treatment of cranio-cerebral wounds are: (1) serious cases are not to be operated upon until shock is controlled; (2) operation is to be deferred until skilled surgeons and equipment are available; expert investigation and operation two or three days after wounding is better than inexpert operations performed immediately; (3) haemorrhage and a rise of intracranial pressure are the only indications for operation on the spot; (4) the longest safe period of deferment is three days; after that time the operative mortality rises steeply; (5) specialized hospitals with neurosurgeon, neurologist, neuropathologist, ophthalmologist, oto-rhinologist, and radiologist must therefore be available within three days' travel of the battle line, and patients should usually travel by air at heights not greater than 5,000 metres; (6) patients with cranio-cerebral wounds stand evacuation better before than after operation; when operation has been performed the wounded man must stay where he is for fifteen to twenty days; (7) in the diagnosis and location of cerebral abscess contrast media are used, and excision with removal of the capsule is considered the treatment of choice.

Blood Transfusion

The blood-donor system of Moscow is worthy of emulation throughout the world. In one hospital we saw 300 donors bled in a single day; in another there were no fewer than 600. Many thousand pints of plasma are also collected from filial institutes in other cities. Donors are assembled in different rooms in accordance with their blood groups, which have already been tested. They are given a special fat-free meal, undressed and clad in sterile theatre clothing, including caps, masks, and cloth boots. For each blood group there is a separate operating theatre. A single woman surgeon with two nursing sisters and five technical assistants controls six operating tables simultaneously. The work is done with skill and precision. It is a model of careful organization, of the highest possible standard of theatre asepsis, and of repeated check and control of both contamination and accurate blood grouping. Dried plasma is put up in small ampoules, connected by means of a rubber tube and clip to a larger ampoule of sterile distilled water, ready for immediate mixing and administration to the patient. Blood is flown to the front in thermostatic boxes, lined with glass wool and cork, with a central compartment for ice or warm water according to the season. At the regimental aid posts and field mobile hospitals the blood is stored in deep pits; the temperature is tested thrice daily, and in the summer months it is controlled by ice blocks which were stored underground after cutting in winter.

Other Fields of Surgery

So many aspects of surgery were studied that selection is difficult. One might write of ultrasonic emulsification of therapeutic agents, of intracarotid injection of sulphonamides, of intracisternal injection of antitetanic serum, of cap splints for maxillary fractures, of gap fractures of long bones, of acrylic resin for dentures (which are delivered many miles behind enemy lines), of plastic reconstruction of the penis by tube grafts and cartilage inlays producing an organ capable of both urination and erection, of the treatment of oesophageal stricture by jejunal transplants, or of the excellent system of medical education by which 25,000 doctors a year are trained. The astonishing fact is that so high a standard of surgery has been achieved in a country where the full development is so young and where contacts with the surgery of other countries has been so limited.

We believe that Soviet surgeons would gain from visits to other countries; we believe that in this way their technique would be improved; but we believe with equal conviction that we gained from our visit to them. We did not approve of all we saw; we disagreed on the treatment of frost-bite; we were unconvinced of the merit of muds, balsams, and wood distillates; we thought that our rehabilitation was better than theirs. But on the other hand much of their work is better than ours; their specialization is excellent; their training of medical students is more thorough; their organization of surgical services is superb. Each of us can learn from the other. In the words of Academician Burdenko: "Our friendship must be much tighter."

RELIEF OF DISTRESS IN THE PROFESSIONS

The Professional Classes Aid Council was a creation of the last war. Soon after that war began it was appreciated how hardly hit were men and women in the professions—in some professions more than others—for whose work the demand had suddenly collapsed. But, as may easily happen again, post-war conditions impoverished many people of the professional classes to an even greater extent than those of war itself, and the Council was reconstituted in 1921 and has carried on its excellent work until the present day. It is a very representative body, its council of over eighty members comprising representatives of nearly all professional bodies with a benevolent side to their activities. The British Medical Association is represented by Dr. Henry Robinson. Last year the Council spent £12,417 on relief, but for the third year in succession there is a debit balance—this time of £1,710. A feature of the work of the Council is the education of children whose parents have suffered misfortune—in some cases children whose parents have been interned in enemy-occupied countries. The number of children assisted last year was 124, and the grants cover school fees, outfits, and maintenance. A very useful almoner work is being sympathetically done; while immediate pecuniary help is given where necessary, the main purpose is to set professional men and women on their feet again and to see them through their difficulties. The class of people it sets out to help are those most liable to be overlooked by ordinary charity, as many or most of them are diffident about calling attention to their plight. The address is 20, Campden Hill Square, W.8.

Correspondence

Foundations of a Comprehensive Health Service

SIR,—I was interested in the letter of Dr. H. C. Killingback (*Supplement*, Aug. 14, p. 24). The need for a considerable accession to the medical profession for the running of a comprehensive medical service is, I think, nowhere in doubt, although there may be different opinions as to its magnitude. In a paper I submitted to the Medical Planning Commission I set out the facts and figures which enabled me to come to the conclusion that the general practitioner service of a comprehensive health service could be begun on the basis that every general practitioner working a whole-time scheme could cope with 2,000 persons, and would carry out all the work now undertaken by general practitioners and the non-hospital medical staffs of local authorities. Such work could be accomplished on the basis of a 40-hour week with, in addition, the time involved in such night duties as might arise in connexion with the care of 2,000 persons. Four weeks' holiday per annum was also allotted to each practitioner in such a service.

It was, however, indicated that this was only a beginning, and that if the work were to be extended to include such services as suggested in para. 4 of Dr. Killingback's letter, the number of persons on a doctor's list would have to be reduced below 2,000. As the population of Great Britain in 1938 was some 46,000,000 and as general practitioners and local authority doctors are computed by Dr. Killingback to number 25,000, it will be seen that there is in any case a sufficient number of general practitioners to make a beginning.

I am unaware that any responsible body advocates the immediate adoption of a whole-time salaried service. The Society of Medical Officers of Health does, in fact, support the policy of a whole-time salaried service, but they do not suggest its immediate adoption. They realize that a comprehensive health service, whether on the basis of whole-time or part-time service, requires to be established on a sound foundation, and that there must be something in the nature of a transition period during which foundations may be laid and various methods of medical service tried out. In the report of the society dated Nov. 20, 1942, they clearly indicated the spade work which was necessary in order that a comprehensive health service might ultimately be established. The order in which this work should be carried out was this:

1. That the Government put its own house in order in the first place so that a Health Ministry be established to include all the health functions of Government Departments and with health as its sole function. This could be done quickly and during the war.
2. That local government areas of sufficient size and with adequate resources be established, in each of which the administration of a comprehensive health service could be satisfactorily carried out. This, again, could be done by the Government without undue delay and without unduly impeding the war effort.
3. That following upon 1 and 2 powers should be given to the new local government authorities to plan and develop such a comprehensive health service as might be considered best for their respective areas after consultation with the local medical profession.

In coming to this conclusion the society, while supporting a whole-time salaried service, nevertheless realized that all reasonable methods of medical practice should be tried out before any final conclusion was reached. Such experimentation will take time, and it would be almost impossible to conduct it during the war.

In the course of the discussions of the Medical Planning Commission and Representative Committee and other bodies nothing has appalled me more than the idea, often expressed, that a comprehensive health service must be established at once and that time was "of the essence of the contract." After all, even in these strenuous days of war, the public does receive medical attention, if not so promptly as before, and we are told on the highest authority that the national health was never better. Why, then, all this hurry? In any case immediate steps towards a comprehensive health service can be taken if the Government will play its part and proceed to lay the foundations by establishing a real Ministry of Health and suitable areas for local government. Following upon these necessary preliminary steps the medical profession can be relied upon faithfully to perform its task of working with all concerned so that the public may have the best health and medical services within its power to give.—I am, etc.,

Willesden. GEORGE F. BUCHAN,
Medical Officer of Health.

A Prisoner of War on State Medical Service

SIR,—After nearly 3 years of total isolation from British medical literature in this little outpost contact has been re-established. Several copies of the *Journal* have lately trickled through. We were in touch with Continental progress through subscription to a local medical journal, but events at home depended on private correspondents. From these we heard rumours of a projected State Medical Service, almost unbelievable since our informants seemed to think it already *fait accompli*. How justified was our scepticism! Surely it were easier to obtain agreement among mediaeval theologians than among modern doctors. The B.M.A. seems anxious to have the opinions of as many doctors as possible. We think that the only way to get a State service in our time would be to ask the opinions of as few as possible, and preferably only one to ensure unanimity. In either case the number of malcontents would be the same.

And why cling to the "free choice of doctor" myth? All our patients for 3 years have had no choice at all, and although we have treated patients of five nationalities—a feat involving no small linguistic difficulty (lay interpreters are a menace)—the results have been no worse than at home, and the number of dissatisfied patients negligible. We hasten to add that the expression of dissatisfaction by the patient entails no material disadvantage to him here. Anyway, how often does the hospital patient choose his house officer or his "honorary"? Meanwhile we follow with interest and good will your efforts and wish you success "in our time."—I am, etc.,

Stalag VB, Germany. STANLEY GILDER,
Capt., R.A.M.C.

General Principles for Future Medical Services

SIR,—To anyone who has at heart the desire to see the profession retain its freedom and respect as an independent body the principles which the Council of the B.M.A. has adopted must come as a bitter disappointment. In nearly every other word there is the assumption that our battle for freedom has already been lost—if, indeed, it has been fought—and that the peace-term negotiations will only determine which body is to take over control of us.

Although the principles do not at present admit of our being converted into a salaried branch of central or local government service, they clearly lay down that future changes must be preceded by the setting up of a "central administrative structure by the State for the central administration of the medical services in the future." This means control by the State direct or control by the State via an intermediary body such as the B.M.A. The continuation of the personal relationship between patient and doctor and right of choice is only the sugar coating to the pill which is coming to the profession in the shape of loss of freedom and control by central authority. Although we may not negotiate away our complete independence now, we shall part with three-quarters of it and so prejudice heavily the position of the next medical generation. Our sons, born into partial captivity, will be an easy prey to a future Ministry of Health, who will complete the second stage of the operation, and, with the loudest protestations of good faith, secure final and absolute control over what was once a respected profession.

If anyone has doubt about the control which is now in sight let him reread the principles adopted by the Council of the B.M.A., paying particular attention to Recommendations A4, D (first part), E (first part), F, I, K, and L, and Immediate Proposal I. In the whole lamentable document there is not a hint that the Representative Committee wants to put up a fight to retain our status as an independent, learned, and liberal body. The discussions have been conducted in the greatest secrecy, and even now they are completed no word may be hinted at by our Representatives until the White Paper has been published. It follows that from this the Government will benefit, not us.

In the future Division meetings members will have the opportunity either to express their views and insist on freedom

or to give the negotiating body permission to hand over our independence and place us under central control. Let us make up our minds that there will be no more voting on prepared resolutions based on what the Representative Body *believes* to be the opinion of the profession. Let there be more statement of fact about our opinions, and due consideration given to the fact that even yet it is not too late for the R.B. to take a firm line with the Ministry. Our freedom can be preserved at any rate until the doctors in the Services come home and have the opportunity of assisting in the reconstitution of the medical services, if they then think that it is necessary.

Above all, it is necessary for every doctor to do his duty by asking himself three questions before voting for a scheme which will lead to central control: (1) Is it going to do the public any good? (2) Is he allowing himself to be used as a pawn in a game of political chess? (3) Is he voting away a birthright of the next medical generation? At the same time let him bear in mind that half the world is locked in a bloody struggle for freedom and the right to live an independent existence. Also, his many colleagues on active service who are engaged in this struggle will feel little gratitude to him for voting away their freedom in exchange for a system of central control, the key positions in which will have been earmarked for highly paid officials promoted in their absence.—I am, etc.,

St. Ives. E. C. ATKINSON.

National Health Policy

SIR,—The B.M.A. rightly states that the provision of adequate food, good housing, good working conditions, ample recreational facilities, and a widespread health education are more important for the health of the nation than a "reshuffling" of the medical services. The B.M.A. then proceeds to argue that the Government should first provide all the social and environmental conditions for good health, and only after this would have the right to interfere in the organization of the medical services. This argument is, in reality, extremely hollow, apart from being ill-becoming to our profession, for who will listen to us if we refuse to put our own house in order?

It is a complete figment of the imagination to think that any democratic Government can carry out important social and economic reforms without the active encouragement and support of the people, organized in political parties, trade unions, professional associations, etc., and without having to sustain a severe struggle against powerful interests which oppose those reforms. Shall not the medical profession lend the maximum support to the forces fighting for the achievement of those environmental conditions which make for better health? It is not enough that leaders of the profession and public figures as Prof. Ryle, Lord Horder, or Sir Farquhar Buzzard should intermittently write letters to the Press, give lectures, or speak in Parliament about health matters and the importance of social medicine. The task is so big that it requires the joint efforts of the whole profession, and requires also that we should educate ourselves. This can be done only if there is continuous free interplay between the preventive and curative services, and between the medical and the other allied health services—that is to say, we need a national health service based on the health centres and the hospitals at the earliest possible moment. It would indeed be a melancholy and defeatist policy to wait for the advent of a new generation of medical practitioners educated by the medical schools in social medicine. This new generation of practitioners would also find that the conditions of practice from isolated private surgeries would frustrate and stultify all their aspirations and knowledge.

The B.M.A. and Dr. Geoffrey Bourne wish to enlarge the already regrettable gap between scientists and politicians. We should, instead, work to bridge that gap, so as to bring the voice of science nearer to the people and in the counsel of their political leaders. If we ally ourselves to the democratic forces in the nation we need have little fear that we shall not be able to maintain, in an organized health service, our democratic traditions, scientific freedom, and a decent standard of living. Proof that this statement is not based on pious aspirations only is given by the recent introduction by the L.C.C., which controls the largest group of hospitals in the world, of enlightened measures that will meet the most important criticisms the profession justly raised against the hospital services of local authorities. The world is moving on, and with it local authorities.

The reorganization of the medical and allied health services thus forms an integral part of the larger aspect of a national health policy, which, of course, must include adequate housing, nutrition, recreation, and education.—We are, etc.,

Queen Mary's Hospital, Sidcup. C. K. VARTAN.
E. MONTUSCHI.

Fact and Fancy in Poliomyelitis

SIR,—I would like to congratulate you upon the masterly leading article in the *Journal* of July 31. There is little to add to your critical review of the Kenny "concept." Nevertheless I would like to remark upon the view of the Kenny enthusiasts that there is something strikingly new in Miss Kenny's methods of treatment by meticulous nursing care, freedom from splints, and hot packs. You have rightly stressed the weight of authoritative opinion in the United States upon the question of infantile paralysis, which has contributed so importantly to our knowledge. In that regard, I would like to draw attention to a classical paper on poliomyelitis written by Peabody, Draper, and Dochez in 1912 (Monograph No. 4, Rockefeller Institute, New York, 1912). May I quote from their section on treatment:

"During the acute stage absolute rest in bed is, of course, a necessity." "The most prominent indication for treatment is usually pain . . . this necessitates the utmost gentleness and care in moving or turning the child." The psychological approach is emphasized. The weight of bed-clothes must be removed. In *some* cases "a light well-padded splint seems to steady the limb." "In general the most effective simple agent for overcoming pain seems to be heat. Wrapping the limb in cotton-wool, blankets, *hot packs*, and hot-water bottles gives great comfort." "When the acute symptoms pass, more active treatment directed towards the *prevention of deformities* and the restoration of *muscular function* should be instituted." "As soon after the first fortnight as the child can bear any movement or handling without pain, massage should be begun." "Contractures begin to develop early in poliomyelitis, and it is essential that they should be guarded against from the onset."

Apart from cradles, "sandbags may be used to support a limb"; or "light apparatus, well padded" and "loosely applied so that there is no obstruction to the circulation." "*The danger of apparatus is that it will keep the limb too quiet and prevent any attempt to use weakened muscles at precisely the period in which both active and passive motions are most to be encouraged. To obviate this it has been our custom to have the apparatus applied at night only, and to leave the limbs free to move during the daytime.*" "We have begun massage as soon as pain would allow and given it twice daily. Its chief usefulness probably consists in assisting the circulation by replacing the effect of lost muscular activity." "Heat similarly exerts a good influence on the circulation. With massage passive motion is used, the rhythmic performance of certain movements stimulating the patient to try to attempt them himself. Of all the methods, however, by far the most valuable one is active movement, or training." The psychological ingenuity required to achieve this is discussed in brief. (The italics in the above quotations are mine.)

Those of Miss Kenny's medical associates who wish to enunciate a new concept of the pathology in muscle should read another excellent article from the United States—namely, that dealing with the changes in denervated muscle by Dr. Sarah S. Tower (*Physiol. Rev.*, 1939, **19**, 1).—I am, etc.,

Exeter. NORMAN CAPENER.

Ariboflavinosis Syndrome

SIR,—I read your leader on the ariboflavinosis syndrome (July 24, p. 110) with more than passing interest, for I have done a good deal of research into the tropical syndrome of retrobulbar neuritis with sore tongue, mouth, scrotum, etc., and was the first to describe a retrobulbar neuritis. (You refer to Métivier as "she." May I correct you? Métivier is a man. I knew him well as a fellow-student at Bart's, and also we have exchanged reprints.)

Your article is obviously well timed and necessary. As one interested in tropical deficiency states one has noticed too ready

an acceptance of a new biochemically discovered factor being used therapeutically, and too sweeping claims made for its success in dealing with a syndrome. My own experience in this syndrome up to 1938 (it included nicotinic acid, and mine was actually the first report to show the relative failure of its therapeutic use in this condition: see *J. trop. Med. Hyg.*, April 15, 1939) was that it was very simple to demonstrate that marmite cured the frankly visible signs on mouth, scrotum, etc., but it was a much longer task to include the whole curative effect on the eyes as well. It took some six months' closest observation, as against almost days in the other case. An end-result to include the whole syndrome was only possible over a comparatively long period. With riboflavin therapy some reports appear to be too early and lacked completeness. It is clear that such reports have indeed gone for the more visible signs only, and, therefore, part of the syndrome, not the whole. Again, there is much conflicting evidence as to exactly how much the tongue *and* scrotum do respond to riboflavin, and this is where I feel your article is so timely.

My particular reason for so welcoming your article is the danger, especially in the Tropics, of claiming an all-too-simple solution or explanation, and with that an apparent simple solution of the important food problems at issue. For the syndrome is not only excessively common but may be very severe. It seems there must be more than one factor involved, and a lot of misunderstanding can be created by over-simplifying the cause, particularly if the *whole* weight of proof is manifestly lacking.

I feel that a great deal of interest attaches to the possible part that poor-grade high-excess carbohydrate diet may play in production. This is not an original claim, but as early as 1930 I drew attention to "gari," a processed manioc derivative, in its constant place in the dietary in affected people in Nigeria. More recent information has given me cause to think that rice is equally likely to play such a part in other countries where it is a staple, and I have published some of my reasons (*J. trop. Med. Hyg.*, Sept. 1, 1942) to that effect. In that article I did not care to say—for reasons which might raise controversial feelings—that, with the exception of Stannus, nearly all the better known and accepted authorities on research had up till 1936, or later, claimed that this sore-tongue syndrome was due to vitamin A deficiency. So persistent and compelling was that influence that the League of Nations Report on Nutrition (1937) insisted this was so. The effect was a wholesale deviation to fat preventive foodstuffs in the rice-eating countries. And yet this syndrome is common to almost every rice-eating country: Malaya, India, Ceylon, China, West Indies, Sierra Leone. It is equally noticeable, again, that visual symptoms are now being found there which seemed to be completely overlooked before Sydenstricker's work. I see no reason why rice should merely hold the field for one particular vitamin B deficiency disease—namely, beriberi—and have no part in the production of other B-deficiency states. Food planning for the future will be of little value if it includes in poor areas a wholesale increase of rice or other staple foods poor in B vitamins.

I should like to end my letter by saying how deeply impressed I have always been with Stannus's work; how little recognized it has been. I think it was in 1940 that he advanced an interesting theory of the possible biochemical causes of pellagra, and *inter alia* he produced the idea that sugars and starches in excess could so disturb metabolism. It seems that there is much to back this view, especially where there are no compensating factors in the rest of the diet, or rather insufficient compensating factors.—I am, etc.,

Blackpool. D. FITZGERALD MOORE.

Specific Gravity of Cerebrospinal Fluid

SIR,—All those who are interested in spinal anaesthesia will, I am sure, feel grateful to Mr. W. Etherington-Wilson (Aug. 7, p. 165) for having investigated the specific gravity of normal cerebrospinal fluid with such admirable thoroughness. There is no doubt that many of the statements which appear in some of the most reputable writings on the subject have been copied from book to book with no attempt to confirm them by personal observation. This criticism, however, cannot be directed to an article ("Precision in Spinal Anaesthesia," *Lancet*, July 30, 1938) in which I ventured to offer a friendly criticism of the Wilson method on the basis of the variability of the specific gravity of the cerebrospinal fluid, although acknowledging that in practice the method had proved its worth.

The variations which I then mentioned—from 1.004 to 1.008—were observed in a very careful, although small, series of investigations which were undertaken, in conjunction with the late Dr. Howard Jones, as far back as 1930. The expert who estimated the specific gravity for us used the most accurate method possible—namely, he used the specific gravity bottle. He informed us that the bead method was inaccurate when applied to fluids of this description, so that, although the weighing method required not less than 10 c.cm. of fluid, we were able to find a small series of cases in which the withdrawal of this quantity of fluid as a preliminary to anaesthetization was thought to have no ill effect. The temperatures were, of course, carefully recorded and taken into account before arriving at the final results.

Recent inquiries among physicist friends have confirmed the inaccuracy of the bead method, for reasons which need not be entered into here. I must confess to being rather surprised that our estimations should give such variable results, since the chemical composition of normal cerebrospinal fluid is known to be remarkably constant. However, there was no getting away from the observations. And so, despite the excellence of Mr. Etherington-Wilson's work, I feel that the problem cannot be regarded as finally solved.

Fluids injected into the spinal theca are subjected to such a complexity of physical forces that it is unwise to rely upon theoretical reasoning in deducing what will happen, and since both the Wilson method and the one which I here described have now been administered successfully in some thousands of cases they must both be regarded as reasonably satisfactory. In both emphasis is laid on gravitational control, but we should not overlook the displacement factor, which probably determines the extent and in some degree the duration of the anaesthesia, while the gravitational factor controls the more precise localization of the anaesthetic zone.—I am, etc.,

London, W.1. NORMAN C. LAKE.

Globin Insulin

SIR,—There are two points I must mention in reply to Dr. J. Trevan's letter (Aug. 14, p. 212).

1. The following are the figures sent me by Wellcome Laboratories of a comparison (May, 1942) between globin-zinc-insulin and protamine-zinc-insulin, expressed in the same way as the later results on p. 212:

Hours after Injection:	2	4	6	8	10	12
Blood sugar:						
G.Z.I.	50	66	79	81	87	90·5
P.Z.I.	54	63	72	77	89·5	82·5

This shows identical action, and I wonder why the results on p. 212 are different and which are right. I must also be excused for wondering if the small blood-sugar differences on p. 212 (at most 12 mg.) show a difference of practical significance in the action of these two insulins.

2. Dr. Trevan is not right in thinking my patient's reaction to soluble insulin abnormal or unusual. It is the exception, and not the rule, to find any marked fall in the high fasting blood sugar within 2 hours of soluble insulin in severe diabetics, and the maximum fall after 30 to 40 units is between 8 to 12 hours (see *Diabetic Life*, p. 224), though this is usually obscured in routine treatment by the carbohydrate given at lunch.—I am, etc.,

London, W.1. R. D. LAWRENCE.

Mastoiditis and D. and V. in Infants

SIR,—May I express my agreement with Dr. P. W. Leathart (Aug. 7, p. 168) that diarrhoea and vomiting of infants may be attributed to over-activity of the parasympathetic nervous system in relation to the gastro-intestinal tract. This, however,

is not necessarily due to seventh and ninth nerve stimulation from mastoiditis. The hypersecretion and hypermotility of the gut which give the diarrhoea of infants may arise in the bowel itself from products of protein decomposition stimulating the vagal branches concerned to abnormal reflex activity. Furthermore, we may attribute the mortality of such cases to a spread of this nervous disorder where there is no evidence of bronchopneumonia or other localized inflammation sufficient to cause death.

I submit that the majority of deaths associated with infantile diarrhoea and vomiting are due to a condition of shock, in which an overwhelming predominance of cholinergic nervous activity produces the typical pallor, cold clammy skin, rapid weak pulse, shallow respiration, and moribund state. The speed with which this condition of shock may develop, in some cases even before there is sufficient diarrhoea and vomiting to cause an appreciable loss of fluid from the body, suggests that the infection produces death mainly by affecting the central nervous system and thereby the gastro-intestinal and circulatory systems.

From this point of view, the haemoconcentration typical of infantile diarrhoea and vomiting at its worst is due to the increased capillary permeability of shock, as well as to the actual loss of fluid from the body. The oedema of various organs so often found post mortem in fatal cases of diarrhoea and vomiting supports this view. Apparently the relatively unstable equilibrium of an infant's bodily processes is especially susceptible to shock-producing agents whatever their nature and wherever they act.—I am, etc.,

Cambridge. R. L. WORRALL.

SIR,—Mr. P. W. Leathart's paper on mastoiditis being a possible cause of fatal diarrhoea and vomiting in infancy (Aug. 7, p. 168) restates a problem of considerable importance. As he remarks, the post-mortem finding of bilateral purulent mastoiditis in such cases is common and is well known to paediatricians. The possibility of such infection being gravitational is supported by the simple experiment of placing powdered charcoal in the nares of infants moribund from dehydration following diarrhoea and vomiting and the recovery of charcoal from the middle ear at necropsy. Mr. Leathart's hypothesis would have been considerably stronger had he produced statistical proof of mastoiditis prior to or soon after the onset of diarrhoea and vomiting, and it is to be hoped he will at some future date produce such evidence. In our present state of ignorance the statement that more often than not no causal organism is discovered is of no value (cf. ulcerative colitis, which has not yet been associated with any causal organism).

Mr. Leathart's condemnation of feeding infants in sickness and health in the supine position should find universal support from paediatricians. The question he raises is of such importance in infantile mortality that it might well engage the immediate attention of the M.R.C.—I am, etc.,

London, W.1. BRUCE WILLIAMSON.

SIR,—I was interested in Mr. P. W. Leathart's article on diarrhoea and vomiting in infants (Aug. 7, p. 168), and should like to add my observations.

In a series of 63 cases of infants suffering from so-called gastro-enteritis in a large L.C.C. hospital during 1936 there were 12 deaths. Post-mortem examinations were carried out in 8 of these, and in every case a petrositis was present; the mastoids were not always involved. In one other fatal case a double mastoid operation had been performed and pus was present. Vomiting was not a prominent feature in this series, and the degree of dehydration was very variable. The ears were examined in all cases, but generally no abnormality was detected and the usual physical signs of otitis media were absent.

This frequent association of otitis media and gastro-enteritis is now well recognized in L.C.C. fever hospitals, where the ear, nose, and throat surgeon is being increasingly consulted.—I am, etc.,

London, W.5. EMILY L. SIMON.

The Government's Milk Policy

SIR,—While generally welcoming the Government's milk policy outlined in the recent White Paper, I was, like the writer of your leader (Aug. 7, p. 173), disappointed with certain proposals, and particularly with those concerning accredited milk. What possible justification is there for excluding accredited milk from a compulsory heat treatment Order? Accredited milk may perhaps be "cleaner" than ordinary milk, but is it any safer? I would submit that accredited milk is almost as likely to contain tubercle bacilli as ordinary milk, and therefore like all such potentially dangerous milk should be subjected to adequate heat treatment before consumption. It would be a real advantage and not asking too much if all milk had to conform to the present accredited standard before pasteurization. The newly introduced resazurin test sets a very low standard.

I was also concerned with the proposal to give equal recognition to all forms of heat treatment provided that the treated milk complies with the phosphatase test and a prescribed methylene-blue test. Incidentally, it is to be hoped that the latter will be of a considerably higher standard than the present bacterial count test for pasteurized milk. But surely the process of pasteurization, which has been proved beyond reasonable doubt to make milk safe without altering its nutritional qualities, should be preferred to sterilization or any other form of heat treatment. Milk, which is such an important article of diet, should first be safe to drink, and, secondly, should be as nutritious as possible. Pasteurization will achieve these two aims, but sterilization will satisfy only the first requirement. Why, therefore, give equal encouragement to both processes?

I realize that for some time there will be an acute shortage of dairy plant, and that the immediate concern is to make all milk safe, and therefore there is some justification for including sterilization of milk in a short-term policy. But I would strongly suggest that a time limit of, say, three or five years should be included in the heat treatment Order to the effect that at the end of this period the process of pasteurization would be the only method of heat treatment recognized. If this suggestion could be included, then the welcome expansion in the heat treatment of milk will be directed towards pasteurization rather than sterilization. If the proposals are left as they are, then I feel that the opposite may be the case, as there is a real danger that sterilized milk, because of its better keeping qualities, may become more popular than pasteurized milk. Such a position has already been reached in this city, where more than half of the heat-treated milk is sterilized.—I am, etc.,

J. F. WARIN,
Birmingham. Senior Asst. M.O.H.

SIR,—May I refer to the final paragraph of your leader (Aug. 7, p. 173). The farmers do not dictate the health policy of the country. This is in the hands of the Government, who can give the public the enlightening facts if it wishes, but it dare not until it is prepared to effect the necessary remedies. It is quite unfair to pit the farmers against the community, endeavouring to place on them an impossible financial burden.

Under present conditions T.T. herds exist only because there are so many non-T.T. herds which give an outlet for "rejects." The Government should provide the market for these and liquidate them. Most of them could be spotted before being impregnated and fed for beef. Our Government might usefully follow the example of the U.S. Governments and compensate the farmers up to two-thirds of the actual value of the rejects.—I am, etc.,

Blackpool. PETER J. MCKENNA.

The Medical Superintendent

SIR,—During the years between the passing of the Local Government Act, 1929, and the outbreak of war medical superintendents of municipal hospitals strove hard to improve the efficiency of their hospitals. New departments were built; the medical and nursing staff augmented in numbers and in quality; the trappings of "Bumbledom" ripped off and everything made more seemly. The success of these efforts was shown in the thanks of harassed general practitioners whose patients could be given immediate admission, the gratitude of

the patients who were quick to appreciate the change, laudatory notices in the medical press, and faint praise from the voluntary hospitals. So far so good. The best municipal hospitals, it was generally acknowledged, were probably equal in standards of treatment (the only true criterion) to the best of the voluntary hospitals.

With the advent of the "period of planning," however, a change has come over the scene. Strong criticism of municipal hospitals and of medical superintendents has come from voluntary hospital sources, both lay and medical, apparently because it is feared that the Government may decide to place all hospitals under local government control and install medical superintendents in the voluntary hospitals. I, for one, sincerely hope that the Government do nothing of the kind, for if voluntary and municipal hospitals were given equal status and opportunities I am convinced that within a few years the latter would fully vindicate themselves in the eyes of the public, who, after all, are the judges in the long run.

Of particular interest is the criticism of medical superintendents, which comes mainly, I note, from London voluntary hospital consultants. I do not venture to speculate on the reasons for this curious geographical grouping of the critics. In your own columns Dr. Geoffrey Bourne has expressed himself trenchantly in articles and in letters. Dr. Bourne is always interesting when treating of semi-philosophical generalizations, but in tilting at medical superintendents he shows that he is ignorant of his facts and has gained his knowledge at second hand. He should know that medical superintendents as a body wish to see their hospitals adequately staffed, clinicians assuming full clinical responsibility for their patients and protected by the medical superintendent from all interference from local politicians in their professional work. For the most part this is the existing state of affairs. Exceptions there may be, but in voluntary hospitals one has seen the most flagrant examples of clinical interference when the chief of a unit was on bad terms with his assistant. Of this Dr. Bourne should be well aware.

The Medical Superintendents' Society, of which I have the honour to be president, has formulated rules for the guidance of its members and local authorities, setting forth the relationship between superintendents and the other members of the hospital staff. While the medical superintendent is senior administrative officer of a hospital, he is not responsible for the actual treatment of all the patients but only for ensuring that they are afforded treatment by the medical staff. In a voluntary hospital it is taken for granted that the patients are adequately treated, but we all know that that is not always the case. The society considers that a certain proportion of the clinical work (bearing in mind his other duties) should be allotted to the medical superintendent, and this should be the only work, apart from administration, for which he should be responsible.

I am sure that attacks on municipal hospitals and their administrators will do little to promote the good of the voluntary hospitals and may well have different results from those expected. It would be easy to criticize the shortcomings of voluntary hospitals—everyone is aware of them—but members of municipal hospital staffs have largely refrained from doing so. Would that a similar restraint were exercised by our critics.—I am, etc.,

W. A. RAMSAY,
Medical Superintendent.

Crumpsall Hospital, Manchester.

Sterility and the State

SIR,—The purport of this letter is to draw attention to certain important aspects of sterility—such as can be done in a brief communication—inspired by recent discussions in both Houses of Parliament, by numerous questions from Members, and particularly by the lengthy debate in the Commons on July 16. The fall in the birth rate and the problem of Britain's declining future population have become the tasty bone of contention of Parliamentarians and sociologists with little or no real or intimate knowledge of the problems of infertility, either voluntary or involuntary. Lord Dawson and Dr. Edith Summerskill have, however, had their say and brought much stratospheric dialectics down to earth.

Family allowances, either at a flat rate as proposed in the Beveridge report or on a sliding scale as urged by Harrod of Oxford, importation of the cream of Hitler's victims from the population of Europe, and the building of a social system in which women can have both a career and motherhood are among the main plans which have been suggested to combat the "silent revolt" against maternity. But the fact that there are nearly one million involuntary barren marriages (so far as can be estimated) in Great Britain seems to have escaped notice. The gynaecologists in this country, and especially those of us who conduct special clinics for the investigation and treatment of sterility, are under no illusion as to the very large numbers of infertile couples who seek a family and have been unsuccessful. The numbers seeking medical aid are rising throughout the country. The following are the yearly totals of women who come to the Royal Samaritan Hospital for Women, Glasgow, complaining of the total infertility of their marriage: 1938, 393; 1939, 387; 1940, 378; 1941, 383; 1942, 505; 1943 (first half), 318.

What is the explanation of the marked increase in the years 1942 and 1943? It has been suggested by Miss Rathbone and others that a good many women find pregnancy a convenient way of avoiding war service. Sir Wm. Fletcher Shaw, President of the R.C.O.G., is reported as saying that this is incorrect and that the majority are really conscientiously desirous of a family. I have tried to investigate this point as accurately as is possible by closely interrogating a consecutive and unselected series of 200 "sterility patients." The number who admitted that evasion of war service was wholly or even to a slight degree responsible for their complaint of infertility amounted to 26—i.e., 13%. If this figure can be accepted as an approximately correct one and indicating the percentage complaining of sterility who endeavour to evade the Ministry of Labour's order that "any childless wife with no household responsibility is liable for war work," then some other factor or factors are responsible for the increase. One of these, in my experience, is the general increase in the number of total out-patients, which makes the apparent large jump in "sterilities" not quite so great, relatively—namely, in 1938 the total of new out-patients at the Royal Samaritan Hospital for Women was 3,706, but in 1942 the figure had risen to 4,446.

Another factor is the separation of husband and wife, either actual for short periods or impending, which often has the effect of stimulating the desire for parenthood and encouraging impatience. This is illustrated in one way by the increase in the percentage of couples complaining of infertility and who are married less than one year. This figure rose from 4.6% in a consecutive and unselected series of cases (500) before the war to 8% during the past year. Still another factor is the public's increasing knowledge of the value of expert treatment—in effect, this tends to make more and more seek advice. Uninquiring acceptance of a barren fate and a reticence built on a kind of modesty are both disappearing. The sooner the public gets to know that most sterility clinics (and experienced gynaecologists) successfully treat more than 30% of their cases the better it will be.

The whole problem of infertility is obviously one of the greatest importance to the State. The Government must take an active part in the planning and financing of the work. The Family Planning Association and the British Social Hygiene Council are doing valuable pioneering and deserve nothing but praise. But involuntary infertility must be the State's great responsibility and, at the same time, opportunity.—I am, etc.,

ALBERT SHARMAN.

Royal Samaritan Hospital for Women, Glasgow.

Kienböck's Disease

SIR,—I was interested to read the two cases of Kienböck's disease of the semilunar (Aug. 14, p. 200) since I have recently seen bilateral Kienböck's disease in a girl at the unusually early age of 17. Attention was first drawn to the condition by increasing pain and stiffness of the left wrist following an injury in which there had been forcible palmar flexion of the wrist. On examination it was found that both flexion and extension were severely restricted, the total movement of the wrist being little more than 10 degrees. There was some swelling of the dorsum of the wrist, and tenderness sharply localized over the back of the semilunar. *X*-ray examination showed gross abnormality of the semilunar, which was con-

siderably flattened, with irregularity of all articular surfaces. In general the density of the bone was much greater than that of the other carpal bones, but there was considerable unevenness of the texture, and some fragmentation was present. In view of this finding radiographs were also taken of the right wrist, and showed similar but less marked changes in the semilunar. The bone was flattened, with rough articular surfaces, while the density was greater than that of the adjacent bones. There was no fragmentation on this side, although the bony texture was uneven. There was no history of injury to the right wrist, and the condition had given rise to no signs or symptoms. It would therefore seem that although trauma had aggravated the condition of the left wrist yet it was not the sole factor in the aetiology; but I was unable to obtain evidence of a septic focus.

It would be interesting to know if radiographs of the apparently normal wrists in the two cases reported by Flying Officer Gordon also showed changes in the semilunar, since the similar condition of Köhler's disease of the tarsal scaphoid is not infrequently bilateral.—I am, etc.,

Maryport, Cumberland. J. D. H. BIRD, F.R.C.S.

The Teaching of Dermatology

SIR,—Brig. R. M. B. MacKenna, in his timely communication (Aug. 14, p. 191), states that "the standard of dermatological knowledge of recently qualified medical men is not proportionate, as it should be, to the incidence of cutaneous diseases in both civil and military practice," and he suggests the creation of a diploma in dermatology as one way out of a situation which reflects small credit upon the medical curriculum. Before the last war it was no uncommon thing for a medical student to graduate having put in only the most perfunctory attendances at "skins," which, for some strange reason, was seldom a popular subject. He is perfectly right in his contention that skin disorders "are statistically and economically of great importance," in both war and peace, and he rightly laments that self-prescribed or advertised remedies appear to be increasingly used by a suffering public.

First, I can personally testify that the nucleus of an examination requiring a high standard of knowledge of skin diseases already exists in the competition for the Chesterfield Silver Medal in Dermatology, instituted some years ago at the St. John's Hospital for Diseases of the Skin (London School of Dermatology), and were this, or some similar examination, to be sponsored by one of our universities with the power to grant not a "D.D." but a "Dipl. Derm.," men would not be found wanting to "keep alight the torch" of dermatology. Secondly, it may not be generally known south of the Tweed that a candidate for the M.R.C.P.Ed. may select dermatology as his "special subject in which *a high standard of proficiency is required*," and this examination demands a very thorough knowledge of the specialty, comprising as it does written papers, together with clinical, histological, and *viva voce* tests.—I am, etc.,

Ringwood, Hants. G. NORMAN MEACHEN.

Maintenance Dose of Digitalis

SIR,—In his paper on maintenance treatment with digitalis (June 5, p. 694) Dr. A. S. Rogen proves that patients who have been in heart failure and have required digitalis are in need of a maintenance dose of the drug in order to prevent a recurrence of failure. This view is fairly widely accepted, but the author was impelled to re-examine the matter as the result of a statement by Gold to the effect that only 15% of the cardiac population requires digitalis. Rogen's finding that all the patients of the group he studied required digitalis implies a disagreement with the above statement. Gold's observations were based on the fact that of all people who have heart disease only about 15% have heart failure. These are the patients that require digitalis and constitute the group which Rogen studied—namely, patients who had been in the hospital with "definite signs of cardiac failure." There is, therefore, no real discordance between Rogen's findings and the statement by Gold that only 15% of the cardiac population requires digitalis.—I am, etc.,

Cornell University Medical College. HARRY GOLD.

Obituary

DONALD ALEXANDER COLES, M.R.C.S., L.R.C.P.

We regret to announce the death, at the age of 88, of Dr. Donald Coles, formerly chairman of the Advisory Medical Committee of the Industrial Welfare Society and of the Council of Industrial Medicine.

Donald Alexander Coles received his medical education at St. Bartholomew's Hospital, where he was house-surgeon, house-physician, and ophthalmic house-surgeon, having qualified L.S.A., M.R.C.S., and L.R.C.P. in 1879. For a number of years Dr. Coles was medical officer to the Gas Light and Coke Company, and was a pioneer in industrial medicine in this country. At one time he was honorary secretary and Associate Editor of the *Journal of Industrial Hygiene*.

We are indebted to Prof. EDGAR L. COLLIS for the following appreciation: Few of us are privileged, before being called hence, to complete our life's work. Such, however, has been the lot of Donald Coles, essentially a Londoner, though his family sprang from Burgie in Morayshire. Always actively busy, no call to crowd even further work into time apparently already bespoke was ever refused. A veritable encyclopaedia of knowledge, he was always ready to acquire more, and revelled in learning from his juniors. He was an untiring attendant at meetings, and we were wont to tell him that his obituary notice would be: "He's gone to a meeting." Now it has come true; for he has gone to meet his life's dear companion with whom he kept their golden wedding. When the last great war drove him from Jerusalem, where he was attaehed to the English hospital, he came back home to London, bringing with him great knowledge of Eastern lore and marvellous Oriental rugs which seemed unusual in his Beckton home in East London. There he threw himself into the field of industrial medicine which was just seeing its birth, working for the Gas Light and Coke Company. His delightful personality and ever-present charm soon carried him to the front. A perfect chairman: without Coles presiding no international congress abroad on industrial accidents and diseases, or meeting at home discussing some technical aspect of the same subjects, seemed complete. At length in the fullness of years he had perforce to forgo coming to meetings, where his presence was ever missed, and his passing will now be recorded with deep regret and sorrow. Truly, a great gentleman has left us.

Mr. T. E. A. STOWELL, chairman of the Advisory Medical Committee, Industrial Welfare Society, writes: Death has removed a much-loved and gracious personality from the world of industrial medicine in the passing of Donald A. Coles—affectionately known as "dear old Coles." He was a leading pioneer in industrial medicine, and his advice was as gladly given as it was eagerly sought by his younger professional brethren who were interested in medicine in its application to the problems of industry. For a number of years Dr. Coles was medical officer to the Gas Light and Coke Company—a popular figure in the many international congresses on industrial medicine, and, up to the time of his death, a member of the Council of the Industrial Welfare Society.

GEOFFREY HOLMES, M.B.

The sudden death of Geoffrey Holmes, which took place at his home in Matlock on Aug. 16, came as a great shock to his wide circle of friends and has left a gap in the ranks of practitioners of physical medicine in general and hydrotherapy in particular which will not readily be filled.

Geoffrey Holmes received his medical training at Cambridge and afterwards at St. Mary's Hospital, qualifying as B.Ch. in 1910 and M.B. in 1911. He filled the posts of house-physician at St. Mary's and house-surgeon to the Hampstead and North-West London Hospital, and then became house-physician to the Devonshire Hospital for Rheumatic Diseases in Buxton, an appointment which directed his attention to the study of rheumatism and its treatment by physical methods, and this became his life's work. At the completion of this appointment Holmes decided to practise in Buxton, but very shortly afterwards, in

1914, he was among the first to join the R.A.M.C.; he served in France till 1917, when his health broke down and he was invalided out of the Service. Although this breakdown left him with a permanent disability which seriously handicapped his physical activities, he took up private practice in Harrogate almost immediately in order to free another doctor for service, and at the conclusion of the war he continued in practice there in collaboration with Dr. Edgcombe. Holmes quickly built up a large general and spa practice and served on the staff of the Harrogate Bath Hospital, to which institution he rendered notable service. He took a live interest in the B.M.A. and became president of the Yorkshire Branch. Always keen on physical methods of treatment, he was an active member of the Section of Physical Medicine of the Royal Society of Medicine and became its president; he was also a member of the Scientific Advisory Committee of the Empire Rheumatism Council and other scientific societies. He studied deeply the place of hydrology in the treatment of disease, and when the University of Leeds set the example of founding a lectureship in the subject he was appointed to it and continued to hold it till the time of his death. In 1938 he was offered the post of senior physician to Smedley's Hydropathic Institution at Matlock, and as he was beginning to feel the strain of private practice he accepted it and devoted himself more exclusively to hydrotherapy. A member of the Spa Practitioners Group and the Physical Medicine Group of the B.M.A., Holmes became chairman of the latter a few months ago, bringing to this new office the energy and enthusiasm which always characterized him. Early in the present year he was invited to join the staff of the Devonshire Hospital for Rheumatic Diseases in Buxton, and combined this with the oversight of the Smedley Memorial Hospital, to the advantage of both.

Holmes had a hatred of humbug of any kind and was often very outspoken in his criticisms, but at the same time he was the soul of good fellowship, and his friendship was shared and valued by a large circle. Those who did not know him well often failed to realize that beneath his love of the good things of life, both material and spiritual, was an intense keenness for his profession and especially for that specialty to which he had devoted himself. Handicapped by the physical breakdown which ended his Army career, he was obliged to forgo the open-air pursuits of his earlier years, but in their place he became an enthusiastic fly-fisherman, and no mean exponent of the art; he had been a member of the Flyfishers Club for many years.

JOHN MURRAY, F.R.C.S.

Mr. John Murray, consulting surgeon to the Middlesex Hospital, died at the age of 80 on Aug. 16.

Born at Monkstown, Co. Dublin, the son of a Dublin solicitor, John Murray was educated at Repton and Dublin University, where he graduated B.A. in 1884, and took the M.B., B.Ch. in 1886. He was house-surgeon to the London Temperance Hospital in 1887, and in 1890 took the F.R.C.S. and also became casualty surgical officer to the Middlesex Hospital, a post he held for 3 years. He was then successively surgical registrar, assistant surgeon in 1896, and surgeon to outpatients. He was Dean of the Middlesex from 1902 to 1908. Mr. Murray was also consulting surgeon to the Hospital for Hip Diseases, Sevenoaks, surgeon to St. Saviour's Hospital, and consulting surgeon, Paddington Green Children's Hospital. In the last war he was captain, R.A.M.C.(T.), and was attached to the Third London General Hospital at Wandsworth. He was the author of an article on surgery of the thorax in the *International Textbook of Surgery*. Mr. Murray married twice, and had one son and one daughter.

PROF. C. M. CAMPBELL, M.D.

News has just been received of the death in the U.S.A. of Dr. C. Macfie Campbell, professor in psychiatry in the Harvard Medical School since 1920, and medical director of the Boston Psychopathic Hospital.

Charles Macfie Campbell was born in Edinburgh in 1876, and was educated at George Watson's College and Edinburgh University, where he graduated M.A. in 1897, B.Sc. in 1900, and M.B., Ch.B. in 1902, proceeding to the M.D. in 1911. After studying in Paris and Heidelberg, Campbell then returned to Edinburgh, where he was for a time resident physician in the Royal Infirmary. Nearly 40 years ago he went to the U.S.A. and was appointed assistant physician in the Psychiatric Institution, Ward's Island, New York. He later held a similar post in Bloomingdale Hospital, White Plains, New York. He was subsequently associate professor of psychiatry in Johns Hopkins University, and it was then that he became a naturalized American. Prof. Campbell was a pioneer in psychiatric treatment, taking a special interest in child delinquency. His work and his writings were well known to psychiatrists in this country, and at the Centenary Meeting of the British Medical Association in 1932 he read before the Section of Mental Disorder a paper entitled "The General Practitioner's Approach to his Nervous or Mental Patients": this was published in the *Journal* of Dec. 31, 1932. In his book, *Destiny and Disease in Mental Disorders*, he stressed the danger in psychiatry of diagnostic terms, and insisted that what was more important was the formulation of a case "in terms of the forces of human life based on the painstaking dynamic analysis of the patient in his relation to the environment." His attitude was well illustrated in the title of another of his books: *Human Personality and the Environment*. He married in 1908 Jessie Deans Rankin of Glasgow, also a doctor. Mrs. Campbell died a few years ago. They are survived by three daughters and a son, who is serving with the United States Forces.

E. C. SMITH, M.D., M.R.C.P.

We regret to announce the death through enemy action of Dr. E. C. Smith, Medical Research Institute, Lagos, W. Africa. Edward Cyril Smith qualified M.B., Ch.B.Dublin in 1921. Two years later he took the D.P.H. and in 1924 proceeded to his M.D. He took the M.R.C.P. in 1936. He was early interested in tropical medicine, and in 1927 took the D.T.M.&H. For a time he was pathologist at Sir Patrick Dun's Hospital and Mercer's Hospital.

The tragic death of E. C. Smith by enemy action, writes a colleague, is an irreparable loss, not only to his many friends—and he had a genius for friendship—but to the whole Colonial Medical Service, of which he was one of the brightest stars. There are few aspects of pathology in West Africa which Smith's work has not helped to illuminate, while his *Atlas of Skin Diseases in the Tropics* and his *Pathology and Bacteriology for Medical Students* will long remain essential books for all those who treat illness south of the Sahara. It is therefore not surprising, though official recognition lagged behind, that Smith had earned for himself an international reputation, so that hardly a medical officer of whatever nationality who found himself in Lagos failed to make the pilgrimage to the Medical Research Institute at Yaba. When war came Smith was most anxious to join the Army, but it was only too obvious that his work at Yaba was of the utmost importance, not only for the health of the civilian population but for the Army Medical Services themselves. When these services were still in embryo Smith's help with media, vaccines, and, above all, advice was invaluable. In addition he most efficiently organized classes in tropical medicine for all newly arrived Army medical officers. Yet it is not only as a competent pathologist that Smith should be remembered. He was perhaps at his best in his garden with his roses and flowering shrubs, or in his bungalow, surrounded by his dogs and books, listening to the music he adored. He was one of the most generous as he was one of the most unassuming of men. West Africa is the poorer for his passing.

SIR BECKWITH WHITEHOUSE

Major R. D. G. VANN, R.A.M.C., writes: It came as a great shock to read in the *Iraq Times* of the sudden death of an old teacher and friend, Sir Beckwith Whitehouse. By those of us who had been his students in the Birmingham Medical School and General Hospital "Becky" was regarded with genuine affection. He was an excellent teacher, whether in O.P.D., ward, or theatre. He had the ability to impart to an audience his wealth of knowledge and experience with a command of English that was a delight to hear. He could always produce that touch of wit or the *mot juste* which went so far in forcing home the point he wished to make. We shall miss him, his impressive personality and dignity, his sense of humour, but, as long as memory is left to us, we shall not lose him.

No. 31

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended August 7.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1943					1942 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	34	2	22	—	—	77	—	24	7	11
Deaths		—	—				—	1		
Diphtheria	493	28	162	66	18	580	26	164	55	14
Deaths	8	—	2	—	—	11	1	1	1	—
Dysentery	122	13	95	—	—	82	9	85	—	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	1	—	1	—	—	4	—	—	—	—
Deaths		—	—				—	—		
Erysipelas		—	36	3	1		—	54	6	—
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				82					93	
Deaths	33	6	6	16	10	34	3	12	13	5
Measles	1,903	138	26	18	2	5,619	563	126	26	64
Deaths	2	—	—	—	—	8	—	5	—	—
Ophthalmia neonatorum	75	6	8	—	1	81	5	17	1	—
Deaths										
Paratyphoid fever	5	1	—	—	1	15	—	3	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal*	484	24	1	1	3	413	19	3	2	2
Deaths (from influenza)	3	—	1	—	—	10	—	3	—	—
Pneumonia, primary			126	13				129	16	
Deaths		16		3	10		9		3	16
Polio-encephalitis, acute	—	—				4	1			
Deaths		—					—			
Poliomyelitis, acute	16	2	—	2	—	10	1	4	4	—
Deaths		—	—				1	—		
Puerperal fever		2	9		—	—	2	6	4	—
Deaths		—					3			
Puerperal pyrexia†	170	12	11	1	2	142	10	11		4
Deaths		—								
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,520	138	176	32	42	1,340	86	231	46	28
Deaths	—	—	—	—	—	—	—	—	—	—
Small-pox	—	—	—		—	—	—	2		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever	8	1	1	3	1	6	—	7	7	1
Deaths	—	—	—	—	—	1	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	1,614	109	59	10	25	953	83	14	50	13
Deaths	8	2	2	1	1	2	1	1	3	—
Deaths (0–1 year)	263	34	40	36	34	271	27	48	34	29
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,527	509	520	195	126	3,475	483	505	149	129
Annual death rate (per 1,000 persons living)			11·7	12·8	‡			11·4	9·9	‡
Live births	5,745	655	855	435	269	5,626	606	836	400	269
Annual rate per 1,000 persons living			17·5	28·6	‡			17·3	26·7	‡
Stillbirths	191	15	42			206	14	38		
Rate per 1,000 total births (including stillborn)			47					43		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes puerperal fever for England and Wales and Eire.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* the incidence of infectious diseases continued to fall—scarlet fever by 459 cases, measles by 359, whooping-cough by 282, diphtheria by 116, and cerebrospinal fever by 13. The figure for acute pneumonia was higher by 52 and that for dysentery by 23.

The biggest drops in the totals of scarlet fever were Yorks West Riding 79, Lancashire 67, London 55, Staffordshire 42; and for measles, Lancashire 60, Monmouthshire 58, Northumberland 46, Essex 34. There were 84 fewer cases of whooping-cough in Yorks West Riding and 35 fewer in Warwickshire, and there were 14 fewer cases of diphtheria in Lancashire.

The rise in acute pneumonia was due to Lancashire and Yorks West Riding, with 21 and 26 cases respectively more than last week; with these exceptions there was no change in the general incidence.

Cerebrospinal fever, with 34 notifications, has fallen in incidence to a pre-war level for the first time since the end of 1939.

The seasonal rise in acute poliomyelitis has begun; 16 cases were recorded—the highest total since last autumn.

No sizable fresh outbreak of dysentery was reported during the week, but there were increases in existing outbreaks. The chief centres of infection were Lancashire 18 (Salford C.B. 10); Gloucestershire, Bristol C.B., 17; Shropshire, Oswestry R.D., 14; London 13; Cumberland, Border R.D., 10.

In *Scotland* there were 34 more notifications of diphtheria. The chief centre of infection was Glasgow, with 60 cases. The number of cases of dysentery fell by 65, but the incidence is still high at 95. The largest totals were Kincardine County 19, West Lothian County 17, and the cities of Aberdeen 14 and Glasgow 12.

Diphtheria

During the week the notifications of diphtheria in England and Wales fell below 500. The lowest weekly totals in the three years 1940-2 were 589, 674, and 572. The incidence of diphtheria during the present year has been lower than in the corresponding period of recent years; the notifications in the first 31 weeks of the six years 1937-42 expressed as a percentage of the number in 1943 were 109, 137, 101, 133, 178, and 145. The experience of the large towns suggests that the case fatality has also decreased. The number of deaths per 100 cases in the large towns during the first 31 weeks of 1940-3 were 5.5, 5.8, 4.2, and 4.0.

During the week reviewed the largest county totals were Lancashire 91, Yorks West Riding 55, Durham 42, and Staffordshire 30. These four Northern counties accounted for 44% of the total notifications in the country.

The Week Ending August 14

The notifications of infectious diseases during the week in England and Wales included: scarlet fever 1,558, whooping-cough 1,855, diphtheria 491, measles 1,476, acute pneumonia 346, cerebrospinal fever 46, dysentery 149, paratyphoid 6, typhoid 10.

The Services

Capt. (Temp. Major) R. M. Johnstone, Capts. J. J. Hogan and J. G. S. Holman, R.A.M.C., Capt. N. A. Subramaniam, I.M.S., and Capt. C. Arumainayagam, I.A.M.C., have been awarded the M.C. in recognition of gallant and distinguished services in the Middle East.

The Efficiency Decoration of the Territorial Army has been conferred upon Lieut.-Col. J. G. Morgan, Majors A. M. Jones, T.A.R.O. (ret.), I. H. Lloyd-Williams, M.C., J. O. Moffat, and H. W. L. Nichols, all R.A.M.C.

CASUALTIES IN THE MEDICAL SERVICES

Prisoners of War.—War Subs. Capt. B. H. M. Aldridge, R.A.M.C., War Subs. Capt. W. T. G. Atkins, R.A.M.C., Acting Major R. C. Burgess, R.A.M.C., War Subs. Capt. C. Rigby, R.A.M.C., War Subs. Capt. L. D. Stone, R.A.M.C., Acting Col. J. Taylor, O.B.E., R.A.M.C.

Yorkshire has three orthopaedic hospitals for children, but there is no provision for treatment after the child reaches school-leaving age unless the condition is tuberculous. It is estimated that the county needs about 800 beds for children and 250 for adults; at present there are fewer than half of this number for children and practically none for adult cripples.

Universities and Colleges

UNIVERSITY OF OXFORD

In a Congregation held on July 24 the following medical degrees were conferred:

M.Ch.—J. P. Childs, *A. N. Guthkelch.

B.M., B.Ch.—J. M. Rice-Oxley, G. D. Bolsover, G. S. Dawes, A. Roper, G. Gordon, R. D. K. Levy, *P. Shubik, *T. C. Bradshaw, *C. W. Bartley, *J. H. Cumberland.

In a Congregation held on July 31 the following medical degrees were conferred:

D.M.—R. H. Gardiner.

B.M., B.Ch.—J. E. French, M. Weatherall, A. A. C. Dutton, G. J. Fraenkel, Mrs. C. M. Phillips, E. C. Mercer.

* *In absentia.*

ROYAL COLLEGE OF SURGEONS OF ENGLAND

CORRECTION

In the *Journal* of Aug. 14 (p. 218) the Diploma in Ophthalmic Medicine and Surgery was, owing to a printer's error, wrongly described as the Diploma in "Orthopaedic" Medicine and Surgery.

Medical News

The British Medical Students Association has arranged a series of lectures on war surgery, to be given at University College Hospital Medical School at 4.30 p.m. every Wednesday as follows: Sept. 1, Mr. A. Tudor Edwards on "Wounds of the Thorax"; Sept. 8, Major-Gen. C. Max Page on "Surgery in the Field"; Sept. 15, Mr. A. H. McIndoe on "Injuries of the Face"; Sept. 22, Col. Elliott C. Cutler, U.S.A., on "American Views"; Sept. 29, Mr. H. J. B. Atkins on "Burns"; Oct. 6, Surg. Rear-Adml. G. Gordon-Taylor on "Sea Injuries and Problems of Shipwrecked Seamen." Two previous lectures were by Sir James Walton on "Recent Advances in the Treatment of War Wounds" and by Prof. J. Trueta on "The Biological Treatment of War Wounds and Fractures." The series is open to members of the British Medical Students Association only. Tickets, price 1s. for all, or any, of the eight lectures, are available from the B.M.S.A. representative in each school.

A meeting of the Colour Group of the Physical Society wil be held at 2.30 p.m. on Thursday, Sept. 9, at the Science Museum, Exhibition Road, London, S.W.7, when a paper on the theory of colour photography will be read by Mr. J. B. Reid.

A meeting of the Royal Eye Hospital Clinical Society will be held at the hospital, St. George's Circus, Southwark, S.E., on Friday, Sept. 24, at 5.30 p.m., when a talk will be given by Mr. V. E. Negus, M.S., F.R.C.S., on the relationship of ophthalmology and rhinology.

On Aug. 23 Mrs. Rebecca Strong, O.B.E., at one time matron of the Glasgow Royal Infirmary, celebrated her hundredth birthday. Mrs. Strong received her early training at St. Thomas's Hospital, London, and from the Dundee Royal Infirmary went to Glasgow, where in 1895 she started a training school for nurses. She retired from active work thirty-five years ago, but in 1929 went to Montreal to address the International Council of Nurses.

Sir Felix Cassel has endowed a number of bursaries to be held by State-registered nurses desiring to take a short intensive course in modern methods of psychological treatment. The greater part of the course, which altogether will last 16 weeks, will be taken at the Cassel Hospital for Functional Nervous Disorders, but four weeks will be spent in London in visits to child guidance clinics and other centres of psychiatric interest. The bursaries, which will be administered by a committee under the chairmanship of Sir Farquhar Buzzard, will provide £4 10s. a week, out of which students will have to pay their living and training expenses, tuition being free. Inquiries should be sent to the Secretary, The Cassel Bursaries, Ash Hall, Bucknall, Stoke-on-Trent.

The first Wellcome Junior Fellowship for Veterinary Research has been awarded by the joint advisory committee of the Wellcome Foundation and the Veterinary Educational Trust to Mr. John Lochiel McGirr, B.Sc., M.R.C.V.S. The fellowship is tenable for one year at £400 per annum and can be renewed for a further one or two years at the discretion of the advisory committee. Another fellowship of equal value will be awarded in April, 1944.

A new physiotherapy department has just been opened at Malvern Hospital. It is hoped that this will become a centre for the treatment of rheumatism.

Dr. Allan Watt Downie, who since 1940 has been pathologist in charge of the Emergency Public Health Laboratory at Cambridge, has been appointed professor of bacteriology at Liverpool University.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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ADVERTISEMENTS should be addressed to the Advertisement Manager (hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and subscriptions should be sent to the Secretary.

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ANY QUESTIONS?

Treatment of P.M.A.

Q.—*What is the latest treatment for progressive muscular atrophy? I am working in India, and have a patient, a 15-year-old girl, on whom I have tried vitamins B and E, massage, and sinusoidal and faradic currents without success.*

A.—Reference to the latest literature shows that there is no really convincing evidence that any vitamin therapy benefits wasting disease of muscle, and carefully controlled experiment shows that vitamins E and B are without effect in progressive muscular atrophy. Similarly physiotherapy has at best a palliative effect. Progressive muscular atrophy is very unusual in a girl of 15, but if the diagnosis is certain there is no specific treatment which will in any way modify its course.

"Postural" Headache

Q.—*A patient complains of headache on the top of the cranium during the daytime, but can manage to do his work. On going to bed at night the headache becomes so intense in about a couple of hours that the patient feels "as if the skull was going to burst" and the eyes become bloodshot. There is vertigo when he wants to turn in bed from one side to another, and also when he tries to get up from the bed. What is the cause of this postural headache and vertigo, and what is the line of treatment?*

A.—The question does not give sufficient information as regards physical examination, blood count, blood pressure, *x*-ray examination of the skull, etc. Hyperaemia from hypertension or polycythaemia would first be suspected. Hypertensive headaches may be relieved by elevation of the head of the bed. The symptoms are also a little suggestive of a type of headache described by Horton (*J. Amer. med. Ass.*, 1941, **116**, 377) as occurring in middle-aged or elderly patients, tending to waken the patient shortly after he has fallen asleep and lessened by sitting or standing erect. This type of headache, however, is usually hemicranial in distribution and associated with the presence of swollen temporal vessels on the affected side. It can be relieved by a course of treatment with small doses of histamine diphosphate.

Laryngoscopy

Q.—*What is the technique required in passing the directoscope invented by Haslinger of Vienna? Is it still a useful instrument?*

A.—The directoscope of Haslinger is a self-retaining speculum which exposes the entrance to the larynx. It is a modification of Killian's suspension laryngoscope, but in suspension laryngoscopy a gallows is needed from which the speculum is suspended, whilst the directoscope when opened is self-retaining, the position of the patient being the same in either method. The principal advantage claimed was that it leaves both hands of the operator free as it does not require to be held in the left hand, as does the ordinary endoscopic speculum or tube. It does, however, stretch the cavity of the pharynx rather tightly, and this is probably the reason why the apparatus is no longer fashionable. It is, presumably, as useful now as it ever was, and is capable of giving a good view of the larynx, but, as with suspension laryngoscopy, there are some cases in which the anterior commissure of the larynx is not exposed fully, and for this an endoscopic tube must be used.

The Safe Period

Q.—*What are the limits of the so-called "safe period"? How is such a period calculated, and how safe is it? I am often asked this question by patients who, for religious or other reasons, wish to avoid contraceptives.*

A.—The "safe period" is based on the knowledge that ovulation usually occurs about fifteen days before the onset of a menstrual period—i.e., on the twelfth to fourteenth day of a 26- to 30-day cycle, counting from the first day of the last menstrual period.

Determination of the "safe period" in any individual demands accurate knowledge of the average length of the cycle and requires careful records over many months. The time of ovulation is then decided by subtracting fifteen days from the expected onset of the next period. The fertile period covers the eleven days made up of the five days preceding and the five days following the expected date of ovulation: e.g., the eighth to eighteenth days of an average 28-day cycle, first to eleventh days of an average 21-day cycle, and fifteenth to twenty-fifth days of an average 35-day cycle. The days of the cycle outside these limits constitute the "safe period."

The time of ovulation, however, is not so constant as to make the "safe period" absolutely safe, and conception has been recorded on any day in the cycle. But it is relatively safe, particularly in women with regular menses.

Cadaver Body Temperature

Q.—*Occasion may arise when one is called upon to express an opinion as to time of death in a body. Apart from other signs, rate of post-mortem cooling is given in textbooks of medical jurisprudence as of importance. Brend, for instance, gives the rules: 2° to 3° F. per hour for first 5 hours, then 1° F. per hour following (p. 32, 1934 edition). No mention is made as to how this temperature is taken. The ordinary clinical thermometer registers down to 95° F., but supposing a body has been dead 4 to 5 hours one would require a thermometer registering lower degrees. Is the use of an ordinary household thermometer, placed in the axilla, practicable as giving a reading, or, if not, what method does one use to estimate the body temperature of the cadaver?*

A.—The rate of cooling given in textbooks of forensic medicine cannot be more than a rough approximation owing to the number of factors to be considered. These are the state of nourishment and age of the body; the nature and amount of clothing; whether the body is in a room or out of doors, in a draught or in still air; and the temperature of the air. A clinical thermometer is of little use, and it is not advisable to take the temperature in the axilla. An ordinary tube thermometer should be used per rectum. The body temperature and the room temperature should be taken as soon as possible and the time of death worked out from all the data available.

Fragilitas Ossium

Q.—*Is any treatment likely to benefit a frail boy aged 7, suffering from fragilitas ossium, and what is the prognosis?*

A.—"Fragilitas ossium," or "osteogenesis imperfecta," is a condition characterized by the ease and frequency with which bones are fractured. The excessive fragility is due to a defect in the activity of osteoblasts, which is often manifest in intra-uterine life and involves bones from cartilage as well as those formed in membrane. Occasionally the condition is hereditary, when the patients generally have blue sclerae, which in some children may be marked without any undue bony weakness. The clinical picture varies with the number and site of fractures, and may resemble superficially those of rickets and achondroplasia. The *x*-ray appearance is quite sufficient to differentiate it from either of these diseases. The tendency to spontaneous fracture varies considerably, as also the rate and degree of effective bony healing. If fractures occur readily the prognosis is poor as regards general fitness, since severe distortion of the skeleton, with crippling, may result. In some patients the tendency to fracture diminishes in later years.

Metabolic and biochemical studies have failed to throw further light on the pathogenesis, aetiology, or therapeutics of this disease. It has been suggested that there is a deficiency of phosphatase (a ferment of importance in the laying down of lime salts in bone), especially in the subperiosteal area; but this finding has still to be confirmed, and, even if true, it is probably only a reflection of diminished osteoblastic activity. Unfortunately no specific treatment is known. Vitamin D, calcium salts, ultra-violet irradiation, and other therapeutic measures have been tried without noticeably affecting the progress of the disease. For the patient in question one would advise (1) making certain of the diagnosis; (2) as careful handling as possible in order to prevent fractures; (3) carefully regulated exercise and massage; and (4) a good general diet. Care in these directions may sometimes tide the patient over until a natural improvement occurs. This is well worth hoping for, but there is no *x*-ray, biochemical, or other test by which it can be foreseen.

Blood W.R. in a Child

Q.—*What method or methods do experienced doctors recommend in taking blood for Wassermann* (a) *in infancy,* (b) *in childhood? Is the Behring venule satisfactory for infants and children, or is a serum syringe preferred? What percentage, if any, require an anaesthetic for successful withdrawal of blood?*

A.—In infants it is usually best, after applying a tourniquet to the leg or thigh, to prick the heel with a triangular needle or make a small incision with a sharp scalpel. Quite often it is possible to obtain blood from one of the veins of the scalp, or from the anterior jugular vein, with a syringe and fine needle; puncture of the superior longitudinal sinus has been done but it is not recommended. In children it is usually fairly easy to obtain blood from a vein in the antecubital fossa; if this is impossible one of the methods mentioned above should be employed.

The use of a Behring venule as opposed to a syringe is a matter of taste; the latter is more easy to manipulate, particularly if it has a peripheral nozzle and a really sharp needle is used. It should rarely, if ever, be necessary to employ an anaesthetic to obtain a specimen of blood; it is wise to enlist the services of a nurse to hold the infant or child and exclude the mother from the room during the operation.

Gynaecomastia

Q.—*A stoker aged 21 has moderate gynaecomastia of which he is very self-conscious. Will it improve without treatment? What can be done with Roentgen radiation? Is this dangerous? Could surgery achieve a result without a scar having the same mental results as the original lesion?*

A.—"Gynaecomastia" is the term usually applied to the excessive growth of the breast or breasts in the male. It may or may not be associated with endocrine disorders, and the morbid anatomy is that of chronic interstitial mastitis. It occurs as a transitory phenomenon in adolescence in a small percentage of normal males. Experimentally, enlargement of the breast may be produced by oestradiol, progesterone, pituitary "mammogen" hormone, testosterone, desoxycorticosterone, and extracts of the adrenal cortex. Clinically, the disorder may be associated with neoplasm of the testis, or adrenal cortex, or pituitary; with atrophy of the testes; and with cirrhosis of the liver, which normally deactivates oestrogens.

In spite of an obvious hormone origin in a particular case, only one breast may appear affected. The treatment is that of the endocrinopathy, where such exists. In idiopathic cases testosterone has been used empirically. The writer has no experience of radiation therapy, but surgical excision has been undertaken with success.

Prevention of Midge Bites

Q.—*Is there any successful method of warding off midges and other biting insects? They are apt to cause much distress among, e.g., forestry girls. Has there been any experience with Stockholm tar? Is it efficacious, and is it likely to cause dermatitis? If chemical repellants are inefficacious, is the use of materials such as butter muslin and chiffon acceptable?*

A.—Many applications are employed to ward off midges and biting insects. These mostly contain an aromatic oil such as oil of citronella, eucalyptus, or oil of cajuput, but since these oils are volatile the effect in hot weather is transitory, and occasionally irritation results. Colloidal sulphur is noxious to many small insects. The following lotion is useful: phenol. ♏ vij; thymol. gr. v; tinct. iod. mit. ʒj; aq. camphor. ad ʒj. This solution not only repels the insects for some hours but is excellent to relieve the irritation and inflammation of bites. Solution of coal tar, 5% in lead lotion or calamine lotion, is useful too. Whatever is used, watch should be kept for any personal idiosyncrasy to the application, or a dermatitis will ensue. A protective net of butter muslin worn round the head would, of course, be very effective, if acceptable by the wearer.

Professional Secrecy

Q.—*Could you give me any advice on a question that is being raised with increasing frequency these days. It is a point in connexion with professional secrecy which arises when inquiries are made about patients who have been in the hospital where I am registrar. Some of these inquiries are made by non-professional people such as Army officers, and they are written on official forms suggesting that replies are expected and usually obtained. Some only require office details, but others demand a whole medical history. One instance recently was a request by a regimental paymaster for dates of admission and prognosis of a woman whose husband, a soldier, was applying for extra allowance. The questions which arise are these: Am I obliged to answer these inquiries? and, Is there any safeguard against redress sought by persons concerned?*

A.—The duty of secrecy is owed by the doctor to his patient. It is quite distinct from any obligation which binds him to be discreet in matters concerning his professional colleagues or hospital. It is necessarily abrogated by the patient's consent, given freely and with full knowledge, or by a legal or moral obligation. In the example given, the request is made by an official, presumably in accordance with regulations and in the patient's own interests. The doctor's duty to his patient is surely first to satisfy himself that the official needs the information to comply with the law, and that to give it is in the patient's interests; and, secondly, to explain the situation fully to his patient and ask her consent. This should be put in writing and signed if the doctor fears that some day the patient may repudiate the consent; but it is worth noting that no doctor has ever been sued before any English court for breach of confidence (one Scots case was reported many years ago). The doctor should

then give precisely what information is required of him. He has thus done his duty to the patient, which includes a duty of disclosure in such cases as this. Where the giving of the information will not help the patient's interests, the doctor should not give it without satisfying himself that he is bound to give it by law—not merely that the inquirer is bound by law to ask him for it. He should ask the inquirer to state the legal authority under which he asks, and verify it himself or seek the help of a colleague better able to do so.

Pyretotherapy for Arthritis

Q.—*I should be glad to have details of intravenous T.A.B. therapy for the purpose of hyperpyrexia. The patient is a professional man, of the apprehensive type, suffering from gonococcal rheumatism of two months' duration. The original infection was 20 years ago. Before the onset of the acute arthritis he had a urethral discharge. Smears and cultures were negative. C.F.T.±. E.M. 1. Admitted. Response to chemotherapy, irrigation, and vaccines was disappointing. Threads were still present in first glass. Ankles and knees swollen, with starting pains. Prostate tender, not enlarged. Recent massage begun. Temperature occasionally 99° F. in the last three weeks. No instrumentation and no physiotherapy carried out. Immediate prognosis appears poor.*

A.—If the complement fixation test was carried out in a reliable laboratory and gave only a doubtful (±) result, it is very unlikely that the case is one of true gonococcal arthritis; it is more probably an "infective" arthritis due to some other organism, in which case the prognosis is less favourable. The first step is to give regular prostatic massage, noting the effect on the expressed secretions; if available, diathermy to the prostate is likely to be helpful. Intravenous T.A.B. therapy is not without danger. It should only be given in circumstances where skilled nursing and the means of combating shock and other complications are readily available. The initial dose should be 25 million organisms; subsequent doses will depend on the degree of reaction produced by the preceding dose or doses. For the second dose 50 millions, and for the third 100 to 150 millions, are usually adequate; the interval between injections should be three days. Alternatively, it has been found more effective to give an initial dose of 25 millions and a second one, also 25 millions, during the height of the fever produced by the first. By this method higher and more prolonged temperatures are usually obtained.

Technique.—Put the fasting patient to bed between blankets as soon as the first injection has been given; when shivering starts put a hot-water bottle in the bed and add more blankets. When free perspiration takes place give the patient plenty of 0.6% saline to drink and change his pyjamas as soon as they get wet. Give the second dose of vaccine when the temperature has risen to about 100° F., usually about four hours after the first. The patient can as a rule be allowed to get up on the following day. The doses of vaccine should be specially put up in sealed ampoules by a pathologist in order to ensure correct dosage and absolute sterility.

Prognosis in Epilepsy

Q.—*A boy aged 11 has had frequent and severe epileptic fits for seven years, often two a day even on large doses of luminal. Three months ago the fits suddenly stopped and they have not returned, even though the patient has been off sedatives for the past two months. What is the prognosis in this case? What further precautionary measures should be taken? Incidentally it was exactly three months ago that I took swabs to see whether he was a diphtheria carrier, and the swabs turned out to be positive.*

A.—It is not unknown for epileptic fits which have been frequent to stop for a while, with or without any anticonvulsant treatment. In a case of this sort the treatment should be continued for at least three years after the last fit. In a boy who started to have fits at the age of 4 years, and who has had them in spite of large doses of luminal, the chances of their recurring are very great. Observation of large numbers of epileptics shows that fits tend to occur in cycles, and it may well be that when this boy's attacks start again he will at some future date have another period when he is relatively free. The fact that he is a diphtheria carrier is merely a coincidence.

A Point of Nomenclature

Q.—*In standard Latin-English dictionaries "valgus" is given as meaning "having the legs bent outwards, or bow-legged," and "varus" as meaning "having the legs bent inwards, or knock-kneed." In modern surgical terminology "genu valgum" means "knock-kneed" and "genu varum" means "bow-legged." How has this reversal of the original meaning come about?*

A.—In genu valgum (knock-knee)—classical term *varus*—the *knees* are bent inwards, and the lower ends of the *legs* (tibiae or shank bones) are splayed outward. In genu varum (bow-legged)—classical term *valgus*—the knees are bowed outward, and the distal ends of the tibiae or leg-bones are inclined inward. It seems clear from the following quotation—*hunc varum distortis cruribus* (Hor.)—that the adjective used refers to the legs and not to the knees. The apparent reversal of the meaning of the Latin words *valgus* and *varus*, which has taken place in the modern use of these words with reference to the knees, may have arisen from the desire of surgical writers to specify clearly the particular part of the lower limb which is bent outward or inward in these two conditions, and at the same time to emphasize that the deformity involves the knee, including the adjoining epiphysial ends of the femur and tibia.

INCOME TAX

Two Years' Tax in One Year

J. H. holds a temporary Government appointment. Income tax is being deducted from him in a manner which in effect means that he will have to pay two years' tax in one year Has he any redress?

*** Tax on Government salaries, etc., is payable on the current year's basis and is deductible within the year in which the income is earned. What has apparently happened is that the assessor for the Department in which J. H. is serving was late in making the necessary arrangements for tax to be deducted. (We assume that J. H. made the appropriate declaration and claimed any allowances due to him within a reasonable time of being supplied with the form of return.) Legally there is no redress, but we recommend J. H. to write to the Controller of Departmental Assessments, the Hydro, Llandudno, North Wales, stating the facts and asking for some part of the burden to be spread forward.

LETTERS, NOTES, ETC.

Total Loss of Hair

Dr. H. HALDIN-DAVIS writes: I see in "Any Questions?" (July 31) that one of the *B.M.J.* "Brains Trust" states that total loss of hair is usually the result of shock or acute anxiety. I very much doubt if this be true. I have seen numerous cases of total alopecia in children in whom there was no question of shock or anxiety. It is well known that in the syndrome known as "alopecia areata" there is every gradation in severity from a single small and transitory patch of baldness to complete alopecia of the scalp and even disappearance of the hair on the body. It is a disease very prone to run in families, and I recall a well-known legal family in which there were several cases, and one member delayed exhibiting his tendency to becoming subject to this condition until he was past 70 years of age. But when he did do so he became completely bald within a few weeks, and in his case there was no question of shock or anxiety. To anticipate critics I will add that his baldness was not of the ordinary senile description. It began with large patches which speedily spread and coalesced, producing the typical billiard-ball effect. But I regret to say that I was not able to follow the case long enough for it to be of any help in assisting your correspondent as to the prognosis in the case of his schoolmaster.

Wanted: Tapeworm Segments

Prof. R. M. GORDON, Department of Entomology and Parasitology, School of Tropical Medicine, Pembroke Place, Liverpool, 3, writes: We are anxious to obtain segments of the tapeworm *Diphyllobothrium latum* in connexion with some experimental work we are doing here in Liverpool. The best way to forward the segments would be to place a little damp, but not soaking wet, cotton-wool at the bottom of a small screw-top bottle, then to drop in the segments and fill up the remaining space with more damp wool. Of course, I would be only too glad to defray the cost of postage, etc.

An Appeal for Back Numbers

Members who do not preserve the *Journal* for binding are invited to send their copies (preferably in bulk) to B.M.A. House, Tavistock Square, W.C.1, addressed to the Secretary of the Journal Board. The cost of carriage will be repaid. There is a constant demand for back numbers, and each issue goes quickly out of print; hence any spare copies published during the war will be welcome. The steady growth in membership to a figure well above 43,000 has increased the circulation of the *Journal* by 12% in the past four years, because every new member must have his weekly copy. Meanwhile there has been a very severe and progressive cut in the amount of paper allowed to be used for printing. Every means of economizing space has been adopted in order to make the paper ration go as far as possible, and nothing more can be done except to reduce the number of pages still further. A member who returns his copies at any time after reading them will in that way put them back into circulation through the Head Office. If the response to this appeal is widespread the help thus given will be very material at a time of great and increasing difficulty.